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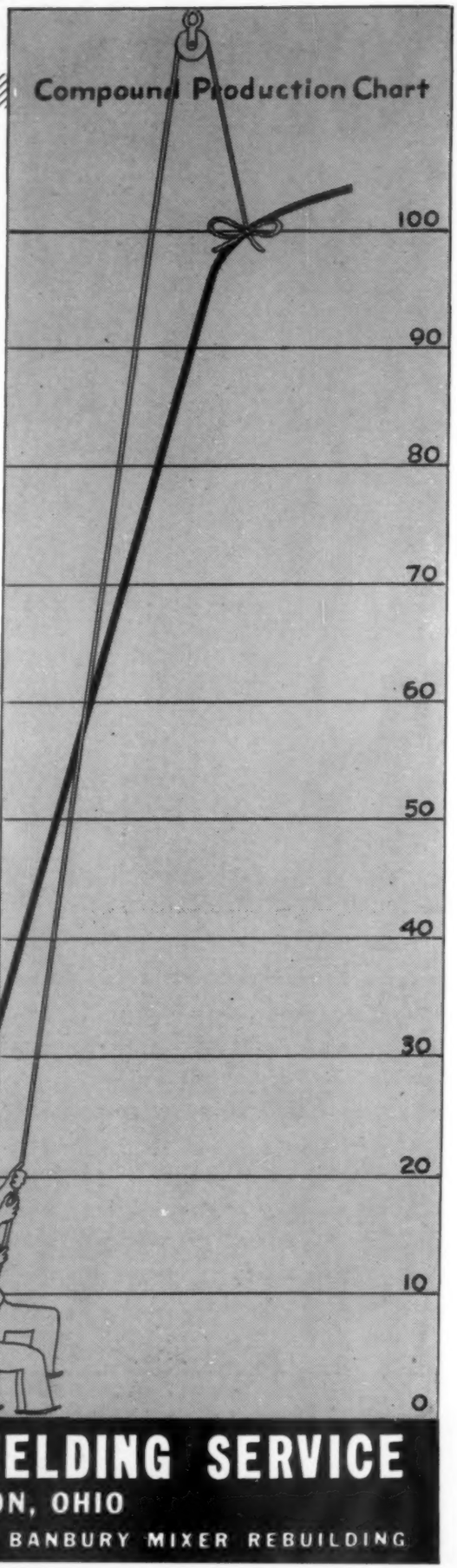

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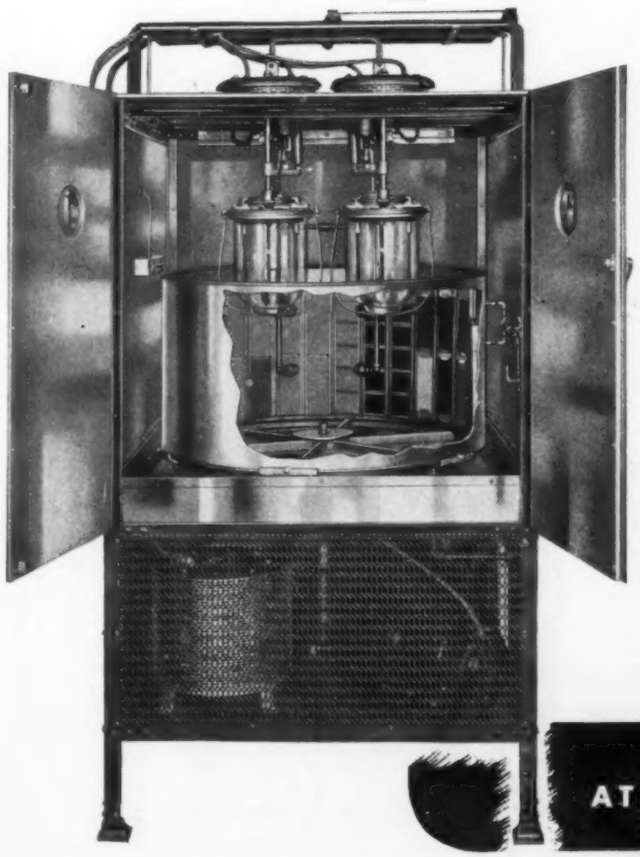

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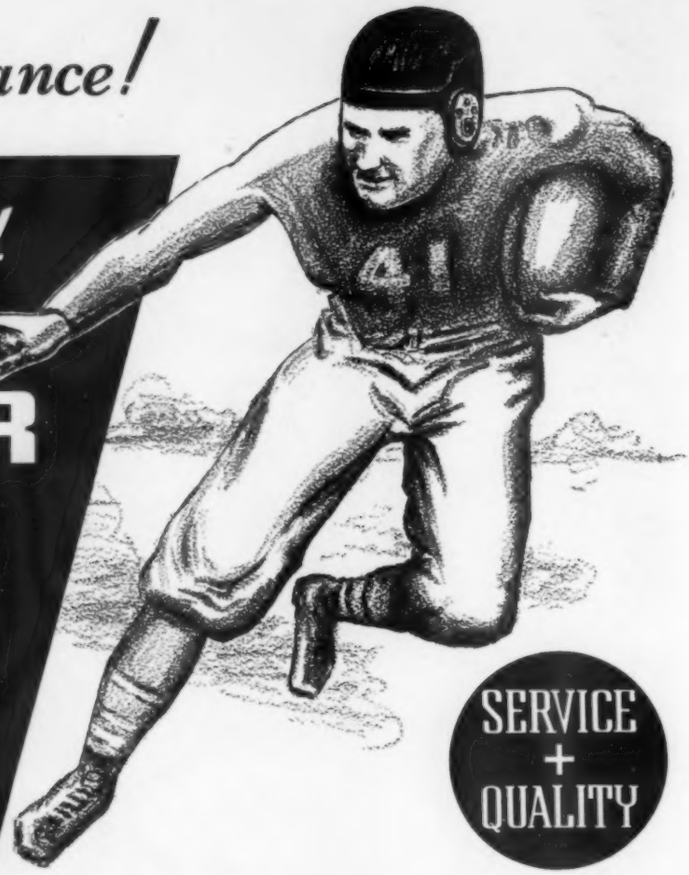

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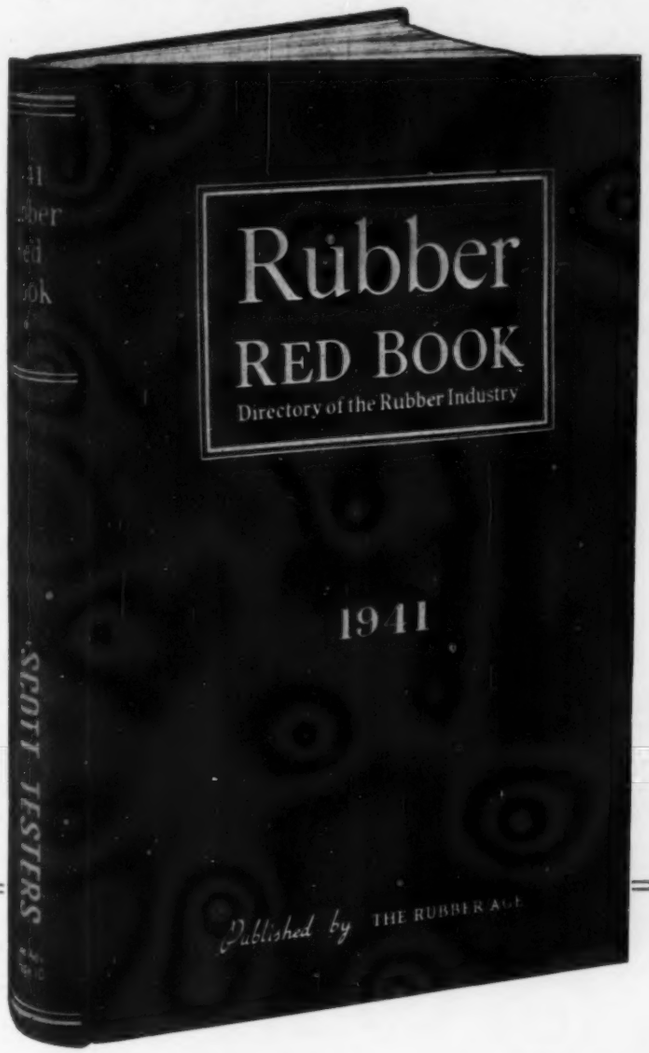

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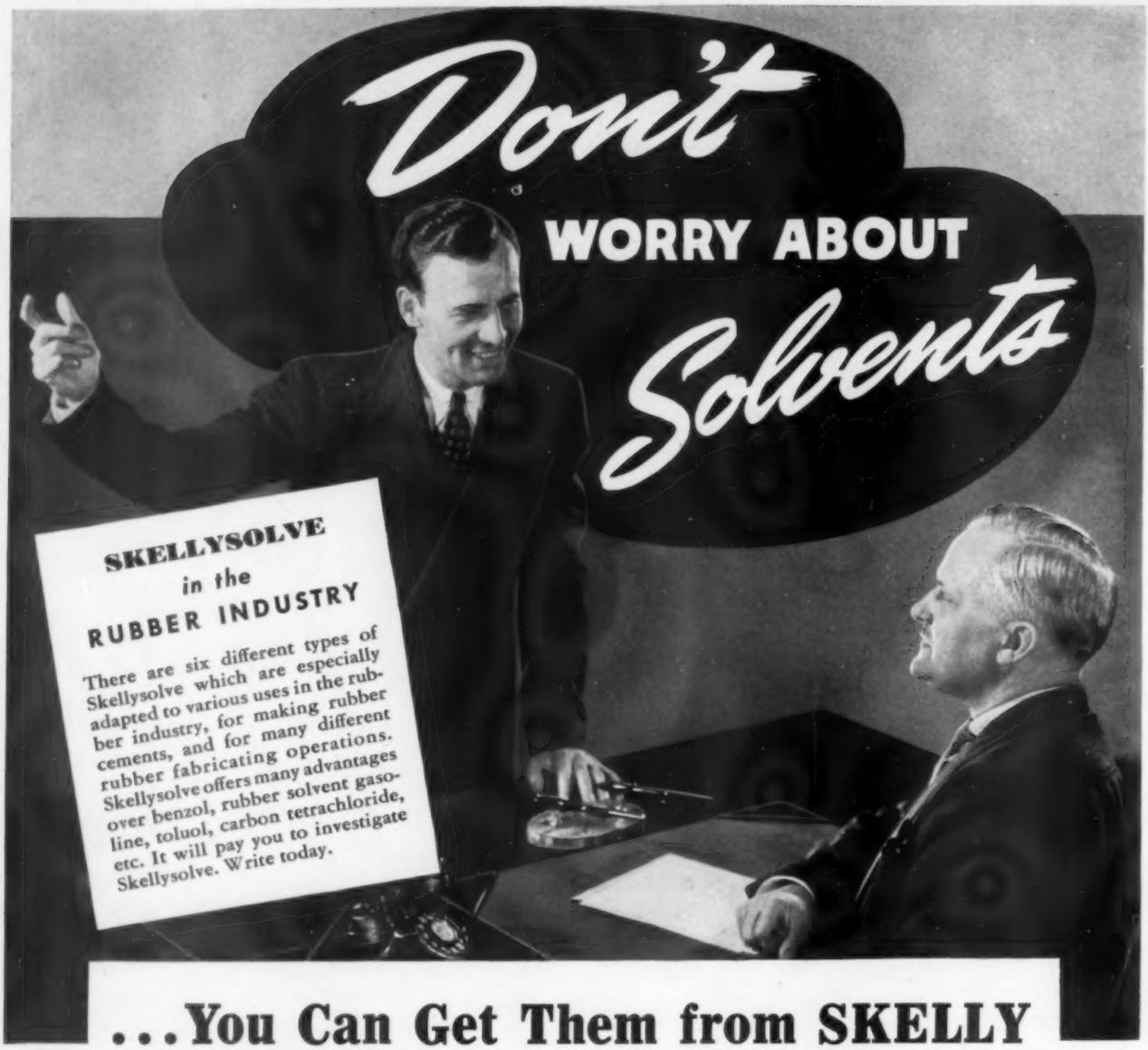
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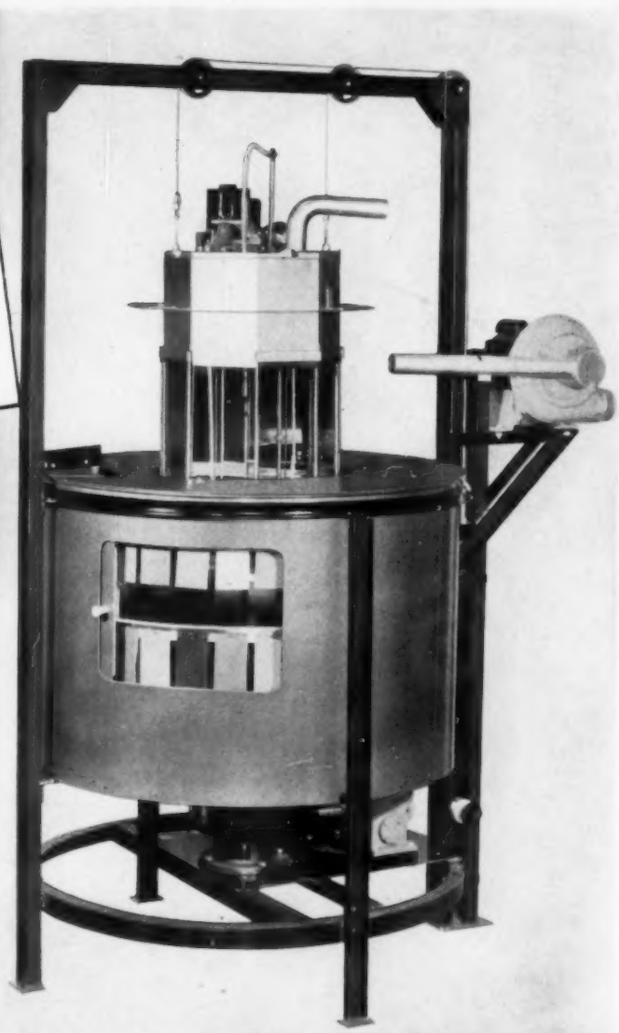

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CONTENTS FOR OCTOBER, 1941

Manufacture, Properties and Uses of Carbon Black —*By A. W. Campbell* 21

Preserving Vulcanized Rubber Goods 27

Synthetic Rubber Under the Priorities System—*By Frank H. Carman* 28

Report of the Crude Rubber Committee 31

Mohawk's Method of Manufacturing Sponge Rubber-Backed Carpets and Rugs 33

Vulcanization of Rubber by Sunlight 34

Prices and Method of Distribution of Government-Owned Rubber 35

Manufacture of Round Latex Thread in Germany 37

An Index to Volume 49 will be found facing Page 76 in this issue.

REGULAR DEPARTMENTS

New Equipment Section ... 53
Book Reviews 56
Editorial 38
Late Domestic News 39
Financial News 50
Names in the News 42
Coming Events 40
Obituaries 50
Los Angeles News 49
Rubber, Cotton Markets ... 65
Chemical Markets 66
Statistics 67
Market Place 71
Classified Ads 75

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ROCKEFELLER CENTER NEW YORK, N. Y.

The **RUBBER AGE**

VOL. 50. No. 1 **OCTOBER. 1941**

Manufacture, Properties and Uses of CARBON BLACK

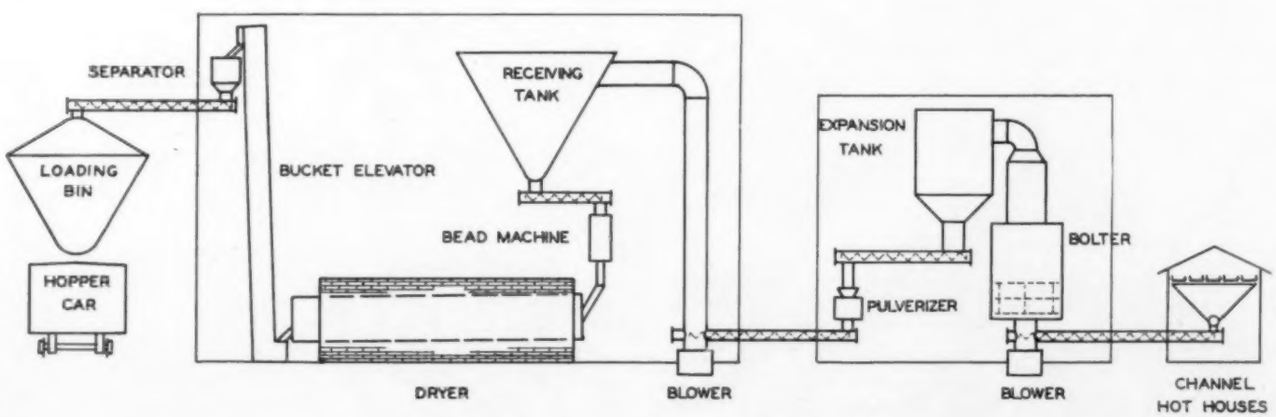
A Review of the Development of Various Types of Commercial Blacks

By A. W. CAMPBELL

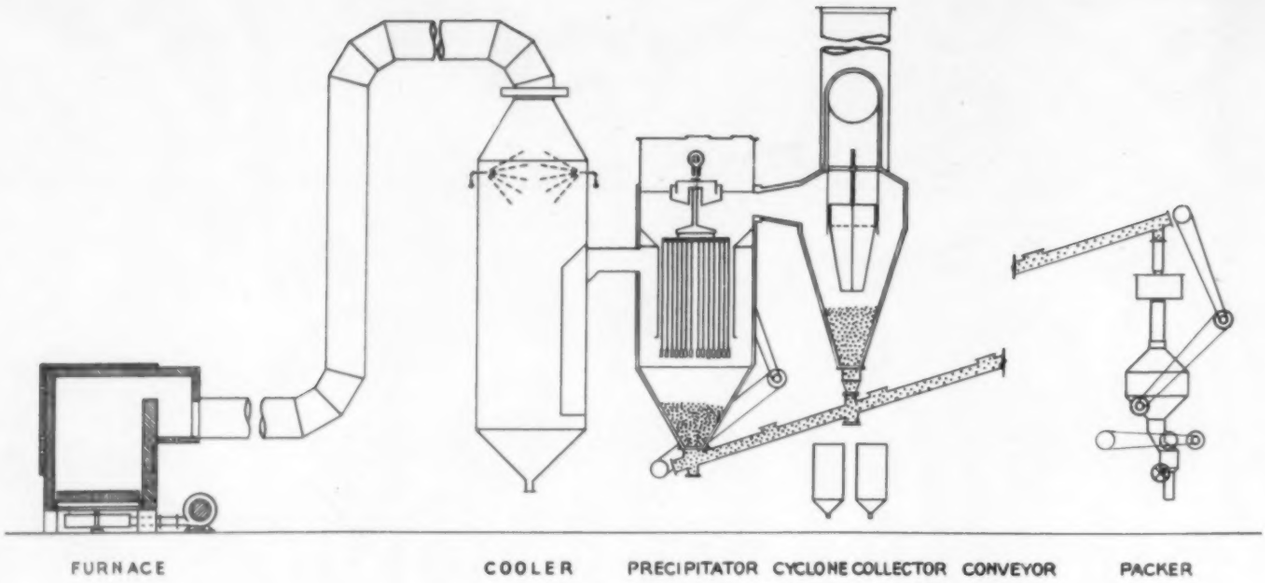
IT is not known when carbon in the free state was first used in rubber compounding, but it may be safely assumed that lamp black was used as a pigment long before the channel black type of carbons was considered. The famous early English rubber technologist, Hancock, was issued an English patent early in the nineteenth century in which he presumably used lamp black. In the beginning of the twentieth century the general policy followed by all manufacturers of preserving complete secrecy was beginning to weaken, and with that lifting of the veil began the cooperation between a manufacturer of a raw material and the manufacturer of rubber goods that has had immense results in the development of the rubber industry and of the automotive industry.

This story is well told by Stillwagon *(1)* when he tells of the first work on this subject done by a company located in Silvertown, England. This company

EDITOR'S NOTE: This article is based on a paper delivered before the Chicago Group, Rubber Division, A.C.S., October 18, 1940.



Channel Black Process of Manufacturing Carbon Black



The Gastex Process

had developed a cord tire and had done some work with a gas black type of carbon. Later, Oenslager of Goodrich investigated the possibility of carbon black in cord tires. In the course of his work he found that unusual properties were obtained by using about 10 volumes (*i.e.*, 10 volumes of carbon per 100 volumes of rubber) of the carbon in a rubber batch. Higher tensiles accompanied by higher moduli and increased wear were observed.

As a result of this work, Goodrich put the Silvertown tire on the market using a black tread and startled the trade with its wearing qualities. This immediately started the Binney and Smith Company, who had supplied the carbon to Goodrich, on an investigation of the methods of manufacturing channel black. Great advances have been made in the manufacture of channel carbon blacks since that time, and today it occupies the principal place in the field of carbon blacks.

The cooperative work briefly outlined opened up a new era in the development of the rubber industry, an era characterized by less secrecy and a greatly increased use of the patent system. This policy of inter-company cooperation has expanded until today a new product developed by any one company is soon in the hands of all companies.

The outstanding success of the channel type of carbons led others to attempt to make carbon blacks. Previous to 1917 Brownlee and Uhlinger were experimenting with methods of making cutting gas, and discovered that in the course of their work they had developed a method of making carbon black which was found to be useful in rubber. This carbon was developed and placed on the market by the Thermatomic Carbon Company, as Thermatomic, but it is now called Thermax. Later the Thermax process was considerably modified by Spear and Moore *(2)* to make a finer particle size known to the trade as P-33 Some time in 1920 the Matlock process *(4)* was installed in the Monroe, Louisiana, gas field and began producing Fumonex (now known as Furnex); this process was followed in 1928 by the somewhat similar Gastex process in the Texas Panhandle.

According to Stillwagon, the production of carbon black in 1911 amounted to about 25 million pounds, practically all of it going to the paint and printing-ink industry. Table I *(5)* indicates that in 1939 over five hundred million pounds of carbon was produced in the United States.

TABLE I—CARBON BLACK PRODUCTION AND CONSUMPTION—1939

Production	
Channel	464,588,000 lbs.
Furnace, "roller," Thermatomic and special	60,578,000 lbs.
	525,166,000 lbs.
Consumption	
Rubber companies, domestic	316,621,000 lbs.
Ink companies, domestic	21,929,000 lbs.
Paint companies, domestic	6,382,000 lbs.
Miscellaneous	11,773,000 lbs.
Total Domestic Sales	356,705,000 lbs.
Total Foreign Sales	203,828,000 lbs.
Grand Total	560,533,000 lbs.

Method of Manufacture

Channel black originally was manufactured with the simplest of equipment. In this form, natural gas flowed from a special lava tip, where it burned freely and smokily. This smoky flame was kept in contact with a section of channel iron which reciprocated slowly to and fro above the flame. The cooled iron collected the free carbon in the flame, and from this iron the carbon was scraped by appropriate means. If this single unit, in a more complicated form, were multiplied by the hundreds of thousands, it would

constitute one manufacturing unit in the present-day channel black industry.

The carbon is described variously as an "impingement carbon," a "channel" type carbon, or an "arrested combustion" carbon. The writer prefers the term "arrested combustion" because of the fact that the flue gas from a "hot" house contains no carbon monoxide and some uncombined oxygen *(6)*. Analysis of the carbon itself shows approximately 95% total carbon content.

The Gastex system *(3)* employs a flame inside of a furnace with the supply of air considerably diminished so that complete combustion does not occur. The products of combustion from this furnace are carried through large pipes, where some atmospheric cooling occurs, to a cooler tower, where a water spray drops the temperature considerably. From this spray tower the gasses are taken to a Cottrell precipitator, where some of the carbon is removed. From the precipitator, the gas stream goes through a cyclone collector, where the remainder of the carbon is caught. From here the carbon is transported to the sifting and packing department.

The Furnex system originally varied from the Gastex system in one important detail: the methods of producing the carbon were quite similar, but the cooling and collecting systems were utterly different. Originally the carbon was washed out of the gas stream by spraying with large quantities of water, which trapped the carbon and carried it down into the filters where it was removed. This treatment was followed by drying, sifting and bagging. However, the collector system has recently been modified. The water collection system has been abandoned and a Cottrell precipitator installed.

No data are available to the writer on the analysis of the exit gasses from either the Gastex or Furnex processes; so it is not possible to classify these methods definitely. In a sense, both are arrested-combustion methods and they may be equally well considered as incomplete-combustion methods.

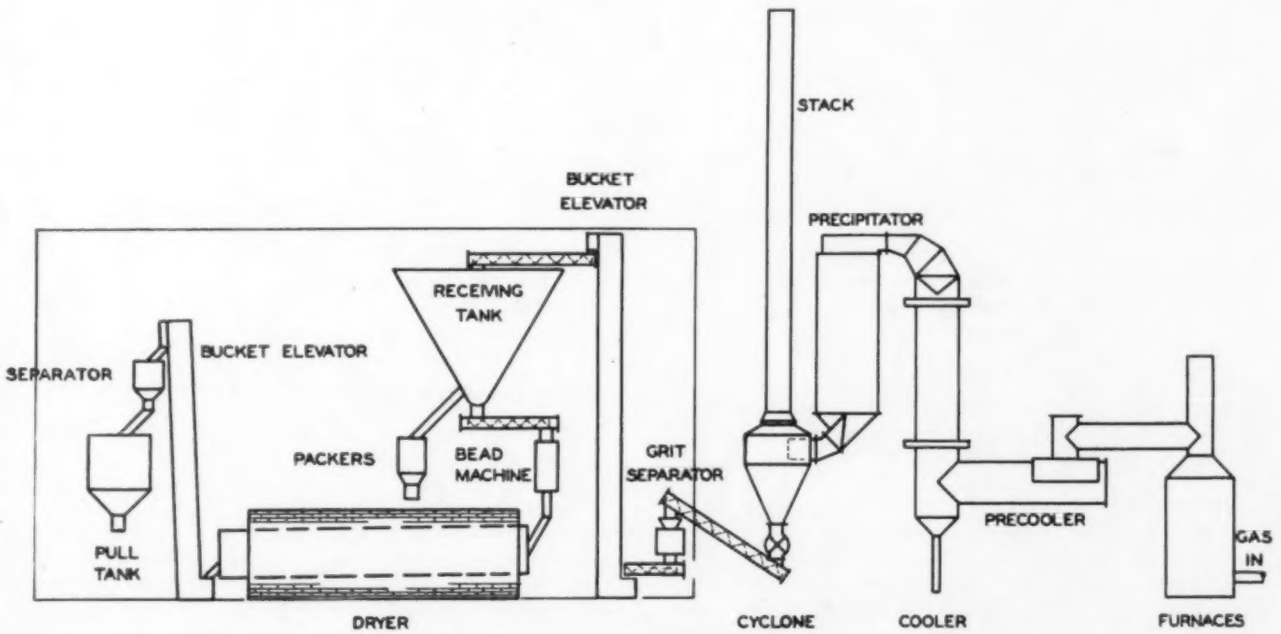
Table II—Analyses for Gasses Used and Produced in the Thermax Process

	Natural Gas	*Exit Gas*
Carbon dioxide	0.4%	0.9%
Carbon monoxide	—	1.1%
Illuminants	0.7%	1.3%
Hydrogen	—	85.4%
Methane	93.8%	5.0%
Nitrogen	5.1%	6.3%

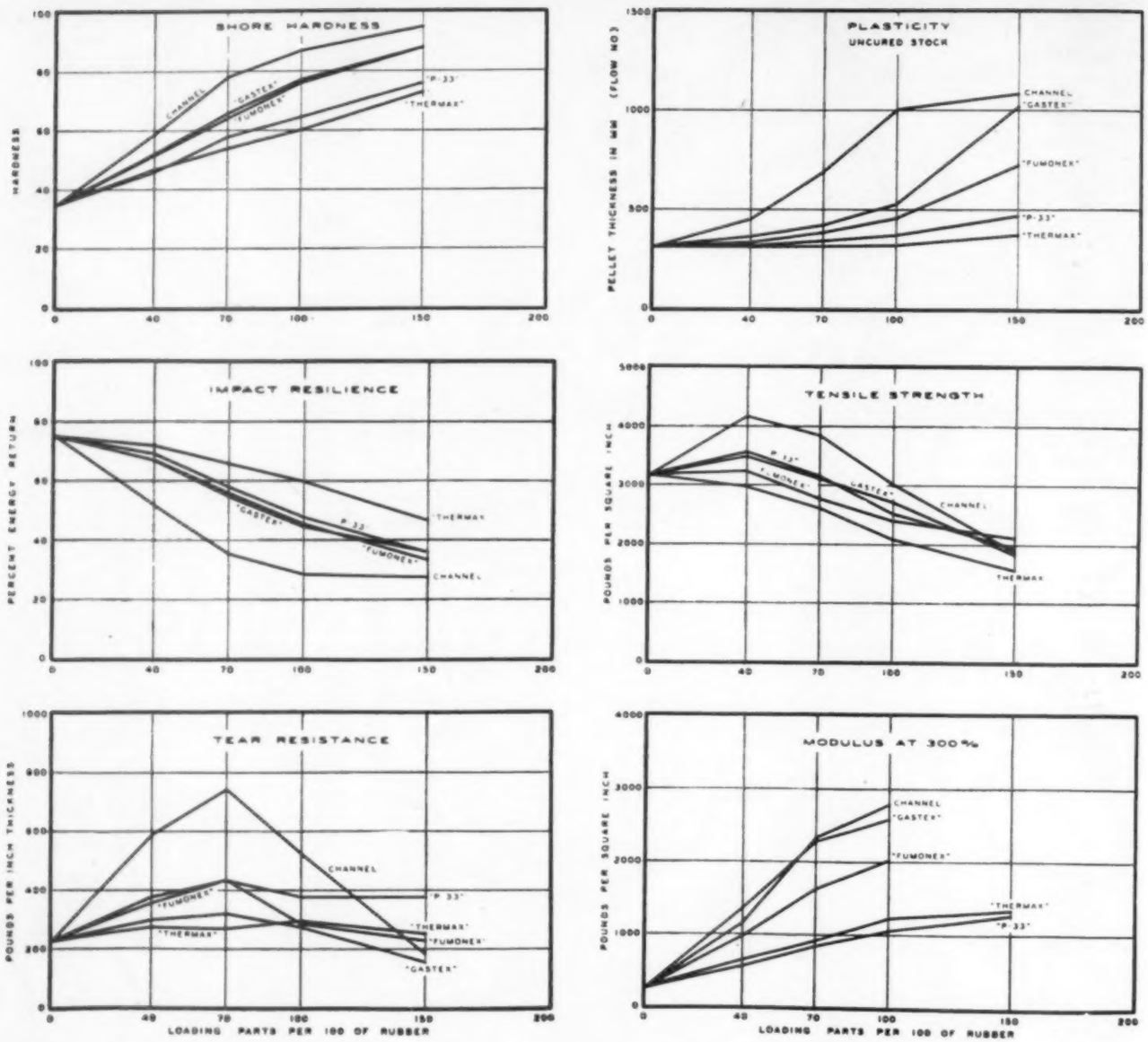
The Thermatomic method is best described as a thermal-decomposition process. The furnaces, which are of generous proportions, are packed with fire brick nearly to the stack. This mass of brick is so placed that small regularly spaced channels exist through the mass. The brick is heated by admitting the natural gas-air mixture under pressure in the bottom, where it is ignited, the flames passing up through the mass of bricks to the stack. When the furnace has been heated to the operating temperature of 1200-1400°C., the heating blast is stopped, and natural gas is admitted at the top of the furnace, flowing downward through the hot brick, where it is cracked to carbon and hydrogen.

The intensely hot cracked gasses go to an adjacent column, and are there cooled to 110°C. by a countercurrent spray of water. From here, the gasses are led into a bag filter system which collects the carbon. This process produces Thermax. The heating and cracking cycles alternate at such a rate that will produce the most desirable products. According to Moore *(7)*, the analyses for the gasses used and produced in the Thermax process are as shown in Table II.

In general, the manufacture of P-33 follows the



The Furnex Process



Effect of Increasing Carbon Black Loadings on Physical Properties (Averages of 10, 20, 30 and 60 Minute Cures)

Editor's Note: Since publication of these results the properties of some of the blacks listed have been considerably improved.

process used for Thermax quite closely. Furnaces of approximately the same construction are used, with the same type of brick packing, and the same methods of heating and introducing gasses are used. However, the gas introduced in this case is not straight natural gas as in the Thermax process; instead, the hydrocarbon gas to be decomposed is diluted with at least twice its volume of an inert diluent gas. This produces a carbon of much smaller particle size, probably because of the dilution effect of the added gas.

The collector system is the same in principle, but much larger in size because of the greatly increased volume of gas to be filtered. Likewise, the system must be supplied with a greater amount of cooling water to pull the gasses down from 1200°C. to about 105°C. Further refinements in the process involve secondary coolers and cleansing systems to prepare the gas for recycling. The gas is recycled through centrifugal blowers and is carefully metered before being introduced into the natural gas stream.

Uses of the Carbon Blacks

The carbon blacks in general are not materials to be indiscriminately dumped into a rubber batch without considering their adaptability to the uses for which that batch is intended. For instance, a channel-black tread stock would not function satisfactorily where a P-33 tube stock does yeoman service, nor would Furnex replace channel black where abrasion resistance was the primary object. These illustrations emphasize the all-important fact that each carbon black has certain outstanding properties which should be studied

TABLE III

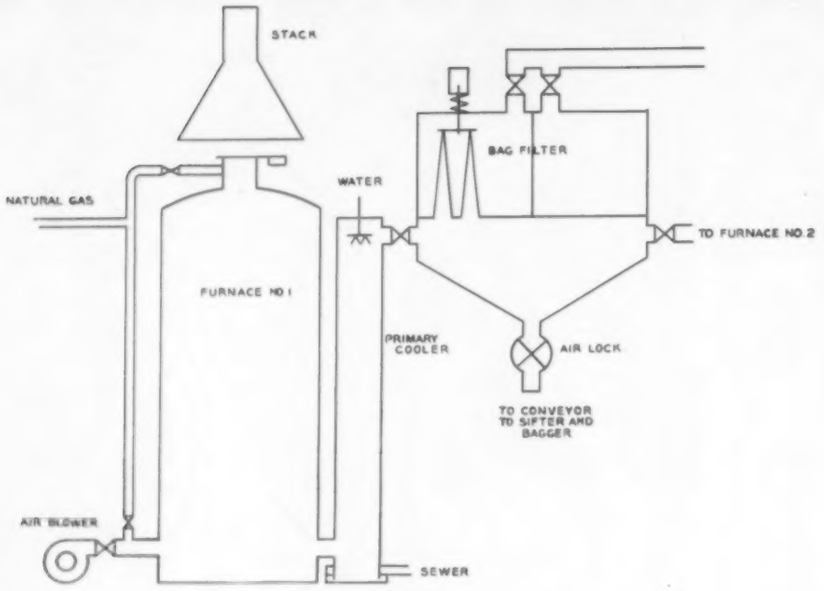
	Pure Gum			Channel			Gastex			Fumonex			P-33			Thermax		
Smoked Sheets	100			100			100			100			100			100		
Stearic Acid	4			4			4			4			4			4		
AgeRite Hipar	1			1			1			1			1			1		
Zinc Oxide	5			5			5			5			5			5		
Sulfur	3			3			3			3			3			3		
Captax	1			1			1			1			1			1		
Channel	—			40			—			—			—			—		
Gastex	—			—			40			—			—			—		
Fumonex	—			—			—			40			—			—		
P-33	—			—			—			—			40			—		
Thermax	—			—			—			—			—			40		
Total	114			154			154			154			154			154		
Min. @ 40 lbs.	300%	T	E	300%	T	E	300%	T	E	300%	T	E	300%	T	E	300%	T	E
5	—	—	—	195	920	590	500	1810	580	310	1295	590	170	2000	785	165	1460	720
10	150	2430	810	680	3870	720	980	3580	630	640	3170	660	340	3680	770	355	3050	715
20	230	3430	755	1085	4360	645	1330	3610	570	935	3440	625	545	3700	690	625	3170	650
30	270	3500	720	1335	4380	615	1500	3530	530	1100	3250	570	650	3530	655	750	2980	605
60	305	3320	685	1510	4090	575	1610	3270	480	1225	3090	540	710	3350	630	825	2730	575
Plasticity (Williams)																		
Flow No.		309			450.5			363			333.5			319			313.5	
Recovery		3			34.5			15			8.5			12			8	
Impact Resilience (% Energy regain, at 25°C.)																		
5		—			48			60			59			62.5			63	
10		71			52			64			64.5			67			69	
20		76			53			68			68.5			70			73	
30		77			53			68.25			68			71			73	
60		76			49.5			67			66			68.5			72.5	
Tear Resistance (Crescent, lbs. per inch thickness)																		
5		—			112			85			68			190			117	
10		200			610			380			340			525			465	
20		263			595			325			430			420			255	
30		250			590			332			455			285			245	
60		181			555			157			195			265			117	
Shore Hardness																		
5		—			45			40			40			35			33	
10		28			51			46			46			40			40	
20		35			58			52			51			46			47	
30		37			61			54			54			49			49	
60		38			64			56			55			49			50	

with the ultimate use of the rubber in view. The various manufacturers of carbon blacks provide adequate data to lead the rubber compounder to the proper use of the carbon.

Carbons may be obtained varying from high reinforcement and low loading power to low reinforcement and high loading power with nearly every possible condition in between. To present some comparisons, Table III gives results on a number of popular carbon blacks at 20 volume loads, all other components being constant. (For an excellent, unbiased discussion of carbon blacks, the reader is referred to the *Vanderbilt News*, Vol. 6, No. 6, pages 15 to 25, 1936.) Curves are also presented showing the results of various loading. These data are the averages of the 10, 20, 30, and 60 minute cures on each stock. Curves are presented illustrating the tensile at break, modulus or load at 300% elongation, impact resilience, tear resistance, Shore durometer hardness, and plasticity of the uncured stock.

If the compounder desires to obtain a stiff compound with high modulus and excellent abrasion resistance, the channel black carbons would be the first choice, especially for such services as tire treads. Under certain conditions it has been found desirable to mix channel black and semi-reinforcing types, such as Gastex and Furnex. In other services where such high tensiles are not necessary and a soft-feeling stock is desired, Gastex is often used. In making a stock for operation under high temperatures, it has been found that loading with P-33 and the selection of proper anti-oxidant and sulfur: accelerator ratios produces fine products. If it is desirable to produce stock of high hardness and very high loadings, Thermax may be used.

Thermax will produce lower modulus stocks and would be selected for those cases where low modulus and high loadings are desired, whereas Furnex produces high modulus and would be used where the higher modulus is considered desirable. It would not be amiss at this point to indicate that these recommendations are very general, and that the compounder



The Thermax System

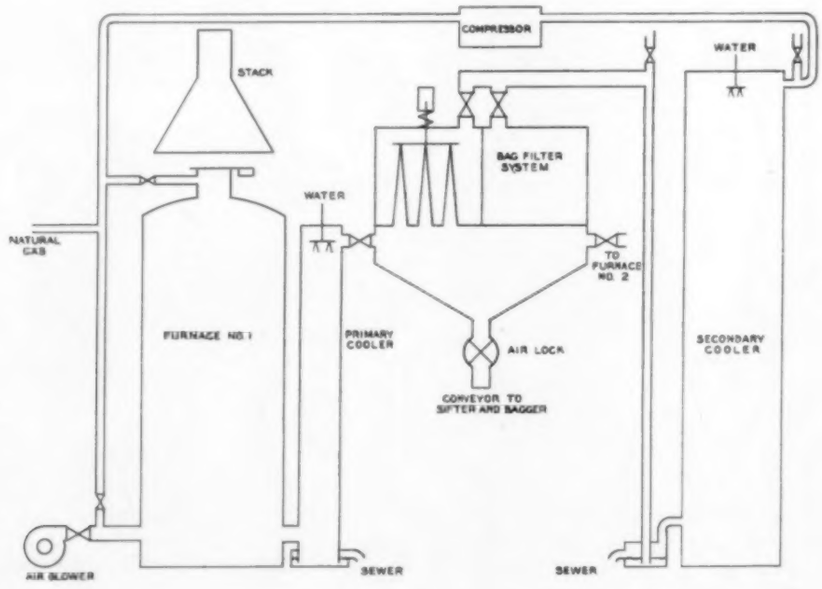
should refer to the specific information available from each manufacturer.

The pH of Carbon Blacks

Wiegand *(9)* introduced a new measurement into the field of carbon black chemistry when he described the application of the glass electrode to carbon sludges. In Table IV *(9)*, the available data on the pH of carbons are presented. In view of the fact that channel black is produced by a flame under conditions which provide an excess of oxygen, it is not surprising to find that this carbon is acidic in water. When such a black is extracted with water and the extract evaporated nearly to dryness, the residue is believed to be acidic. This has been verified by Schoenfeld *(10)* and Campbell *(11)*. Earlier work by King *(15)* on activated carbons indicates that oxalic acid is obtained from these materials.

Campbell has found that the aqueous extract of channel blacks quickly decolorized hot acidic permanganate. In this connection, the acidic reaction of the channel blacks under the conditions which Wiegand used in the determination of pH may cause ionic adsorption; thus, the acidic reaction is due to adsorption of the basic ion of the solution rather than to the presence of acids on the carbon.

In the case of the carbon blacks giving basic reactions, an alternative explanation is possible. In the production of all these carbons the gas stream was cooled with water from which alkaline materials may have been deposited on the carbons. The influence



The P-33 System

TABLE IV—pH OF CARBON BLACKS

Carbon	pH
Micronex Mark II (slow vulcanizing)	3.6
Micronex Standard	4.1
P-33	8.2
Thermax *(a)*	8.2
Fumonex (or Gastex)	9.3

(a) Data from Thermatomic Carbon Co. laboratories.

of this basic material would also be evident in the higher rate of cure in rubber of these carbon blacks.

Particle Size

The influence of particle size of a pigment upon the properties of the rubber batch containing that pigment has long been recognized. In general, the smaller the particle size, the greater the reinforcement effect in rubber. Most of the early work was done with the ultra-microscope with a resolution limit of about 0.10 mu. However, in 1940, two new attacks on the problem were reported. Wiegand et. al. *(12)* using the new electron microscope, and Clark and Rhodes *(13)* using the X-Ray method, have both reported their results.

The ultra-microscope is limited in its resolution by the wave length of the light used, while the electron microscope, using energy of far shorter wave length, is able to "see" much finer particles. As a result, the electron microscope has observed and permitted the measurement of many particles far finer than could be seen with the ultra-microscope, and thus has brought the reported average particle size down to a considerably smaller figure.

The measurements with the electron microscope may not constitute the final determination of particle size, but they are a distinct advance in the technique. The work of Clark and Rhodes using the X-Ray gives us a measure of the crystalline unit of the aggregate. In their work, they calculated the number of particles present based upon the measurements reported by Gehman and Morris *(14)*, which in turn were founded on the methods of ultramicroscopy.

If the results of Clark and Rhodes are recalculated using the ratio between the Gehman and Morris values for Micronex and the Wiegand values for the same carbon, the values obtained for the number of particles present in the aggregate is changed somewhat as is indicated in Table V.

Some Questions Still Unanswered

There are some questions still left unanswered in these comparisons. For instance, when P-33 and Gastex are compared using the Allen technique *(16)*, they appear to be of approximately the same size. As long as one considers reinforcement from the standpoint of tensiles, the agreement between particle size and reinforcing value seems fairly reasonable; but if a comparison is attempted between modulus and particle size, then the correlation breaks down because the moduli of P-33 and Gastex are quite far apart. It seems to the writer that there is still room for research in this particular field.

TABLE V—PARTICLE SIZE DATA

Carbon	Gehman and Morris *(14)*		Wiegand et al *(12)*		Clark and Rhodes *(13)*		
					Altitude	Base	Particles Per
	Mu	Å	Mu	Å	Å	Å	Aggregate
Super Spectra	0.025	250	—	—	14.4	x 16.4	8.1 x 10^6
Micronex	0.064	640	.0275	275	15.9	x 18.9	9.2 x 10^6
P-33	0.159	1590	—	—	21.0	x 24.7	6.4 x 10^6
Thermax	1.120	11200	—	—	18.6	x 25.3	2.4 x 10^7

Assuming that the electron microscope gives the correct measurements of the aggregate, the number of particles per aggregate can be recalculated to that base by applying the factor $\frac{275}{640}$ or .429:

Super Spectra	3.5 x 10^6
Micronex	3.95 x 10^6
P-33	2.75 x 10^6
Thermax	1.03 x 10^7

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Preserving Vulcanized Rubber Goods

A RUBBER preserving solution consisting of 8% glycerine, 8% alcohol and sufficient water to make 100%, is said to be one of the very few solutions which have proven to be of any practical value in the preservation of vulcanized rubber goods, it is pointed out by the Glycerine Producers Association of America. Although this glycerine-alcohol-water mixture has no effect on deteriorated articles, new rubber goods are well preserved when immersed in it.

A newer, more complex mixture for preserving the suppleness and elasticity of rubber articles, patented abroad, is said to be rather unique in that lemon juice is an important active ingredient. Glycerine, however, is the chief constituent of this mixture which is rubbed on the rubber surface or in which the rubber articles are steeped to obtain the preservative action.

SYNTHETIC RUBBER
Under the Priorities System

By FRANK H. CARMAN

Staff Expert, Synthetics Rubber Branch,
Chemicals & Allied Products Branch, Office of Production Management

The synthetic rubber situation continues to be the center of attention, what with some three hundred rubber manufacturers concerned with its disposition. What is the present status of synthetic rubber production in this country and what can be expected in a year or two? Why were all types of synthetic rubbers placed under mandatory priority? How much of present production goes into defense items? What are defense, non-defense and civilian items? And, of particular importance, how does priority control of synthetic rubber work? These, and other pertinent questions, are answered publicly for the first time by an official representative of the Office of Production Management in the following important article.—Editor.

THE present status of synthetic rubbers was so excellently covered by Mr. E. R. Bridgwater in his paper given recently in Atlantic City* that any discussion on this subject alone would be an anti-climax at this time. However, the government side of the synthetic rubber problem, particularly the functions of the synthetic rubber branch of the Office of Production Management in connection with production and priorities, and the future picture may be of interest.

With all the material now being made in privately-owned plants and the major portion of the synthetic rubber available being of the so-called oil-resisting type, the layman might ask why the Office of Production Management is so interested in this material at present. These synthetics in the last ten-year period have become an essential item for the rubber industry. Although the tonnage may be small compared with natural rubber, there are hundreds of uses today which are essential in our over-all defense effort.

The Detroit industrial area is so closely allied with the defense program that little need be said of our common objective of expediting the national defense of the country. However, information about the priority control of these materials may lead to a better conception of what the Office of Production Management is trying to do, why it is necessary, and how it is being done.

The priorities system is designed primarily to aid the defense program, but it can be used to aid important civilian projects since the latter often have a direct bearing on the completion of a defense project. However, an effort should always be made to find a solution through other means than priority rating. Briefly, priority is assigned to make sure that first things come first, and that all things needed for national defense are produced promptly, on schedule, and without delay.

There are three broad steps that the Office of Production Management can take to give priority aid. These are:

(1) Blanket ratings of a limited type, designed to help certain companies or projects in urgent situations to obtain needed materials quickly;

(2) Individual preference rating certificates, issued to manufacturers for specific orders, to meet specific problems;

(3) Industry-wide priority control, usually involving the allocation of available supplies.

The particular circumstances of any given need for priority aid determine the steps that are taken. For example, an individual preference rating certificate may be given a manufacturer to expedite delivery of a transformer for a new power plant; the priority may not be needed to obtain the raw materials for manufacture but it might be required to justify the scheduling of this item ahead of other production having less importance. It only applies to one order or contract.

Blanket ratings have been assigned to give priority aid to entire projects, as for example a new synthetic rubber plant. This rating can be used continuously over a set period of time to apply to many deliveries of scarce material. When the supply of a raw material becomes so low that there is not sufficient for all defense needs, a point can be reached where similar priorities compete with each other for delivery and many of the vital indirect defense products may suffer; some form of industry-wide control is then necessary.

Also, individual producers may not be able to ration equitably and justly the available supply to the best interests of all. With industry-wide control, allocations made by the Priorities Division take precedence over individual certificates in case of conflict.

EDITORS NOTE: This article is based on a paper presented by the author before the Detroit Rubber & Plastics Group at a meeting held in Detroit, Mich., on October 3, 1941.

(*) This reference is to the paper on "Status of Synthetic Rubber" delivered by Mr. Bridgwater, Manager, Rubber Chemicals Division, E. I. du Pont de Nemours & Co., as part of the Symposium on Rubber for Defense, presented before the Rubber Division, A.C.S., at Atlantic City, N. J., on September 11. The four papers comprising that Symposium will be published in the November, 1941, issue of *Industrial & Engineering Chemistry*.

There are several conditions that have prevented the smooth flow of critical materials in the past. A producer might have contracts for all of his production and this would not allow the acceptance of defense orders as he is legally bound to fill all contracts. Prior to August 27, 1941, such defense deliveries could most easily be directed through industry-wide mandatory control and allocation. Priorities Regulation No. 1, dated August 27, 1941, directs that defense orders must be accepted, but this cannot replace the allocation procedure when the supply is very limited.

Reasonable Stock Is Desirable

Without some form of control, excessive stockpiling cannot be prevented and this certainly is not desirable in an emergency. A reasonable stock on hand is highly desirable, and there is no intention of keeping supplies of raw materials down to the extent that only small production runs can be made at any given time.

Mandatory control is not set up with the idea of shutting off non-defense or so-called civilian production, and anything done to dispell this mistaken idea in the minds of fabricators and customers will be a step in the right direction.

During the first quarter of 1941 there was an acute shortage of synthetic rubber, partly due to the general upswing in business but particularly due to the large increase of defense production requiring this material. Mandatory control and industry-wide allocation of neoprene first became necessary and in July of this year all types of the so-called synthetic rubbers were included. Before proper rationing can be set up, it follows that some information must be obtained on the products to be manufactured and steps taken to insure the flow into the proper channels.

No one questions the importance of direct defense production, and these products have first call on the available material. Everyone has his own idea on the relative importance of the indirect and non-defense or purely civilian products. Obviously, all are important in the economic picture or synthetic rubber could not be used. In many instances a fabricator will use one of these materials in only one type of product and, naturally, will insist it is urgently needed in the over-all program. It is therefore necessary that all production and uses be carefully considered before the available supply of material is distributed.

The only way for the Office of Production Management to get all the facts regarding requirements of synthetic rubber for various uses is through a questionnaire. As the material is being used for a large number of defense products as well as essential civilian items, considerable detail was believed necessary in order to allow intelligent allocation.

It has been desirable to have three main classifications of production, namely: defense, non-defense and indeterminable or indirect defense products. Defense orders can, of course, be easily recognized and have been defined as all contracts or orders for delivery of a given material which is to enter directly or indirectly into the manufacture of any product for the Army or Navy of the United States, or for the defense of Great Britain, or for the government of any other country whose defense the President shall have deemed vital to the defense of the United States.

Naturally, non-defense orders are easily recognized, but that class requiring some intelligent study is the indirect or indeterminable type of product. Many of the latter, although not being sold directly to the defense agencies, have an important place in the defense program, sometimes being even more important than the actual defense item itself. If a particular product has defense significance, yet priority rating, government contract or known defense character cannot be proved, the item should be listed in the indeterminable group with all necessary details as directed.

Allocation must be based on the relative importance of all the synthetic rubber products, and, of course, defense must be given as high an allocation as possible with the objective of enabling manufacture of these products in their entirety on the scheduled date. Complete information on these items is reported in the questionnaire so the Office of Production Management can be certain of the need. By law, when priority has been assigned, you are required to manufacture such products ahead of all others if scheduled in that manner. If material has been allocated for defense production of this nature and is used for other products, the Director of Priorities has the right to withhold future allocations. The cooperation of industry has been splendid in all phases of this program.

Non-defense products can, of course, be readily classified, but here all items are not of the same significance, and allocation must be based on a careful grading in the order of their importance. For example, synthetic rubber for curb pump hose is more important than for heels and soles where a substitute is available. Synthetic rubber household gloves have been drastically curtailed with little hardship to the public in general. But it is highly desirable that these same gloves be manufactured in a limited amount for use in steel mills, acid plants, or where special solvents are encountered. Special rolls for printing, although very important for that industry, are not as strategic as rubber-covered rolls for steel mill operations, or, to carry it a step further, as critical as a fuel line hose for a bomber in the need for synthetic rubber during this period.

Indirect Defense Classifications

The indeterminable or indirect defense classification is the most difficult to allocate rationally for in many cases the products have a direct bearing on defense production. A seal for a special machine tool may be vital to shell manufacture, yet may not carry a priority or be on a Government order; unquestionably this is more important than an oil seal for an automobile and allocations must be on this basis when the supply is critical. The oil industry has a very important position in the national defense program, and it is obvious that oil suction hose for handling crude oil is somewhat more vital than ordinary curb pump hose. Hose for a machine tool is more critical than grease gun hose for the corner service station. Gaskets for a new power plant transformer are very vital in the operation of the unit which may be supplying power to a direct defense project.

Most of the fabricators make an excellent reply to the questionnaire sent out each month. With the details given on the indeterminable products which include the item to be manufactured, the amount of material required and the customer, it is possible to make a fairly accurate decision on the relative importance in the over-all program. It should be noted that

the general plan of allocation is by product rather than the easier procedure of giving defense its full requirement and letting the balance go to essential civilian usage in whatever manner the producer desires. The procedure may not be one hundred per cent correct, and any suggestions on the defense character of any products which are not being given proper consideration in this allocation should be brought to the attention of the Office of Production Management.

As previously indicated, synthetic rubber requirements have increased very rapidly and this relatively new material now plays a major role in defense. It is estimated that 78% of the present supply is entering into defense in some manner. Some of the volume uses are in such products as bullet-proof tank linings, fuel and oil line hose for aircraft, general oil and gasoline hose for the Navy, wire and cable for marine as well as aircraft production, gas-proof clothing and fabric treatment in general, barrage balloons, miscellaneous aircraft molded parts, cement, packing and gaskets of all types, steel mill rolls, and protective coating for steel mill equipment. Approximately 60% of all defense allocations are entering into the aircraft classification.

It is estimated that there will be 25 million pounds of synthetic rubber produced during 1941; this includes the neoprenes, Thiokols, Hycar, Firestone and Stanco Perbunans, and Chemigum. The forecasts for 1942 and 1943 are 48 million and 70 million, respectively. The industry stockpile as of September 1, 1941, amounted to approximately one month's supply, based on current demands. Since all these grades are produced in the United States, there is no need for a government stockpile as in the case of crude rubber.

It is significant to note that all producers have materially increased their manufacturing capacity during the current year and further expansion will be made in two plants between now and the fall of 1942. In each instance the producer has recognized the need for the synthetic material in the over-all economic field and has gone ahead with private capital. The new capacity brought into production in 1941 has exceeded the expected increases in several cases; the producers in all instances are to be complimented on these results. Because of this additional material, all defense requirements including certain strategic items for Great Britain are being met. It is believed the existing plants and projects now under way will have sufficient capacity to handle all military, indirect defense and civilian requirements.

Total Requirements for Rubber

The total requirements, including military and essential civilian, have been roughly estimated at 22 million pounds for the year 1941. Very little of this is replacing crude rubber, and it is agreed this volume, about 1½% of the total crude rubber to be consumed in the same period, has little significance as a crude rubber substitute if imports were to be drastically curtailed.

The foregoing information has dealt only with the oil-resistant types of synthetic rubber. Considerable publicity has already been given to the four ten-thousand ton plants being constructed for the manufacture of a general purpose synthetic rubber. Mr. Bridgwater has fully discussed the financing, economics, operation, and possible use of this production; very little can be added at this time. The Office of Production Management has recognized the defense character of these projects and reasonably high priority ratings have been granted.

Early in 1943 these plants should be in production with an annual capacity of 89 million pounds. The tire companies will be expected to use this rubber, and some definite educational program for its use probably will be set up in the near future. New manufacturing capacity will be required for approximately 35,000 tons of butadiene and 13,000 tons of styrene per year as raw material for the general purpose rubber. The Reconstruction Finance Corporation is now negotiating for the construction of these units.

Construction of a plant for the manufacture of "butyl rubber" has already been started, and it is expected this material will find wide application in the rubber industry. The capacity has been reported in the order of 4800 tons per year.

The Rubber-Like Materials

The plasticized polyvinyl chloride and vinyl-chloride vinyl-acetate co-polymer resins have certain properties resembling rubber and are being used for special applications in the defense program. Certain grades under the trade names of "Koroseal" and "Vinylite" are under full mandatory control at this time. These materials are currently used in large amounts for wire insulation and sheathing, and in coating fabrics for special purposes.

The estimated production of these resins for 1941 is 9.4 million pounds; with increased capacity now being rapidly completed, the forecast for 1942 production is 23 million pounds. These amounts of resin become roughly 15 and 40 million pounds of the plasticized material ready for use. (These figures apply only to the resin under mandatory order No. M-10). It is interesting to note that the forecast for plasticized resin production in 1942 is materially larger than the total synthetic rubber production in 1941. The major portion of the polyvinyl chloride production is now going into direct defense products.

During the first half of this year the supply of certain grades of synthetic rubber was very critical, and it was desirable that specifications be adjusted to allow the use of alternate grades. The Materials Divisions of the Army Air Corps, the Navy Aeronautical Section and the Bureau of Ships, together with the Rubber Manufacturer's Association Technical Committee, did excellent work in changing these requirements to allow a broader use of synthetic rubber in general. One grade cannot be expected to carry the defense load, and it is imperative that customer specifications and manufacturing processes be set up to allow alternate materials.

The future of synthetic rubber appears very bright at this time. A multitude of new uses can be opened up with the materials now becoming available for general use. Many manufacturers have been forced to curtail certain lines during the emergency, but this may be over during the first quarter of 1942. The rubber industry will be expected to use the general purpose synthetic in an educational program, and it is certain the producer's chemists and engineers as well as the technical men in the consumer plants can make this "click" and obtain results in a manner believed to be impossible two years ago.

Report of the Crude Rubber Committee

Presented Before the Division of Rubber Chemistry, A.C.S., at Its Semi-Annual Meeting, in Atlantic City, Sept. 11-12

THE Crude Rubber Committee has so far offered its tests as "tentative" standard tests, with the expectation that members of the Division of Rubber Chemistry who would wish to do so would try them out and submit their objections, if any, to the Committee. The Committee is very pleased to report that no serious objections have been raised to any of the tests offered and so it concludes that the tests are generally acceptable.

The Crude Rubber Committee, therefore, proposes that the following tests be adopted as "Standard Tests" for crude rubber and will publish these tests in *Rubber Chemistry and Technology* as such tests and as adopted and approved by the Division of Rubber Chemistry. This publication of the tests will group them so that they will be available for use easily. At the same time, the tests are coded by letter and number so that they may be referred to conveniently.

Crude Rubber Tests

C1—*Cure Characteristics:*
A standard recipe for evaluating a given sample of rubber as to its vulcanizing properties.

C1a—*Material Specifications:*
The materials, except for the rubber, should be of specified quality in order to eliminate variations due to material. The specifications cover the materials used in the recipe and are for no other purpose.

V1—*Viscosity (Plasticity) Test:*
The term viscosity is adopted in the standard test as this is a more exact terminology. Two methods of test are suggested: the Mooney shearing disc plastometer and the Williams parallel plate plastometer. The method of preparation of the sample is carefully described and the test calls for milling to three different degrees of softness of the rubber to more accurately evaluate the viscosity properties.

W1—*Water Absorption Index:*
This test, which is of particular interest to cable manufacturers, follows in general the method already used by the industry. The preparation of the sample is carefully outlined and the percentage absorption is proposed as an index rather than the weight absorbed by a given area.

A1—*Manganese Content:*
An analytical procedure for the determination of manganese is covered by this procedure.

A2—*Copper Content:*
An analytical procedure for the determination of copper is covered by this test.

F1—*Foreign Material:*
Although the Crude Rubber Committee has proposed two methods for the determination of foreign material, only the one carried out entirely in the laboratory, or the so-called "small sample" method, is proposed for adoption as standard. The factory method is not adapted to cross-comparison of results, particularly between producer and consumer, and was issued by the Committee only to give information on a method found useful.

Latex Tests

L1—*Sampling:*
This covers methods of sampling latex in drums and in tank cars.

L2—*Total Solids:*
The conditions of evaporation and the size of sample to determine the total solids are described.

L3—*Dry Rubber Content:*
The determination of the solids precipitated by acid is covered by this test, which defines the conditions under which the acid addition is made and the sample dried.

L4—*Coagulum:*
From various causes small particles of coagulated latex may sometimes be found in shipments of preserved latex. This test covers the determination of the amount of such particles.

L5—*Methyl Red Titer or Alkalinity:*
Two general types of latex are considered:
(a) Latex containing no fixed alkali or base other than ammonia
(b) Total ammonia content of latex which contains a fixed alkali.
The first is carried out by direct titration and the second by a distillation process.

L6—*pH of Latex:*
The determination of the pH of latex with the glass electrode is described in detail.

L7—*Viscosity and Yield Point:*
The use of a capillary tube for measuring the viscosity of latex has been found quite satisfactory and the specifications for the equipment and conditions of operation are covered.

L8—*Laying Down a Film of Rubber:*
While this is not an actual test in itself, the proper method of laying a film of rubber for use in testing certain properties of the rubber in the latex must be specified. This section covers the point in question.

L9—*Copper in Latex:*
The film of rubber made according to L8 is tested for copper by method A2.

L10—*Manganese in Latex:*
Similar to L9 except that manganese is determined by method A1.

L11—*Water Solubles:*
The water soluble material is at times of importance and a method of determining these is covered.

L12—*Acetone Extract:*
The usual method of acetone extraction is used on a film of rubber from latex.

L13—*Mechanical Stability:*
A device for measuring this property and the proper conditions under which the determination should be made are outlined. Constant speed and controlled temperature together with a method of observing the endpoint by using a screen are the principal points.

The above covers all the tests so far proposed. The Crude Rubber Committee has also given further consideration to the development of a test to determine the aging properties of crude rubber. So far, a great deal of work has been done without reaching a definite conclusion. The problem has also been mentioned to rubber technologists in the Far East who are giving the matter some consideration. The present pressure of work for defense needs does not permit the Committee to carry on any volume of work so the problem has been set aside temporarily, but will receive attention in the future when conditions have changed.

Another problem which has been given careful thought is sampling. In the method of testing rubber for water absorption, a method of removing a sample from a bale has been proposed. This method is satisfactory for the sampling of individual packages, but does not cover sampling lots of several packages. Each member of the Division no doubt has some basis of drawing samples of groups of bales which he considers satisfactory but no universally satisfactory method has been proposed. The Committee was very fortunate in having Dr. Smallwood of the U. S. Rubber Co. read his paper to them, and the members agreed that cooperative work on the problem would be highly desirable. Under normal conditions this would now be under way but the Committee feels that such an extensive undertaking cannot be started now. The matter is, however, on the agenda of the Committee for future consideration.

The Committee is glad to report that research work on rubber and latex is still going on in England and the Far East and communications are exchanged between the Committee and rubber technologists in both countries.

The Committee has recently completed a very careful examination of a large sample of rubber from a Malayan plantation. The results are being submitted to the plantation, but are not made public.

Latex Testing—Mechanical Stability

The standard method of testing the mechanical stability of latex calls for a special piece of equipment which, unfortunately, is now unobtainable because of priorities on aluminum. The Committee would like to refer the members, meantime, to a less defined device, described before the Division by Messrs. Novatney and Jordan. A description of this equipment may be found in the March 15, 1941, number of *Industrial and Engineering Chemistry, Analytical Edition.* This equipment is not recommended as alternative to the standard, but merely as a type of mechanism which can be employed with fairly satisfactory results during the emergency when the standard equipment is not available.

Future Activities

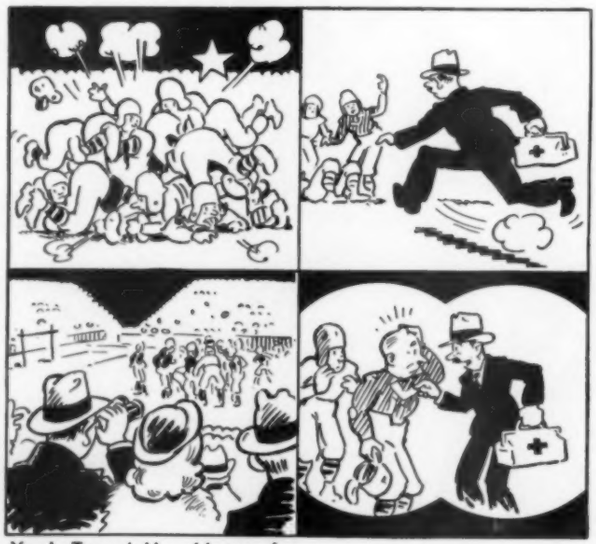
The immediate outlook for active work by the Committee does not look bright. As the work is not financed by any group, it must necessarily be placed second to the regular demands on the various members. In spite of this, however, the Committee strongly urges the Division to keep a committee for contact with technologists and to be ready to take up the study of some of the problems when conditions will allow. To discontinue the committee would be to break off a point of contact between producer and consumer technologists which has been and will continue to be of value. Regular reports to the Division will be made, but the development of new tests will be delayed.

The Committee regrets the announcement of the resignation of two of its members: Dr. E. M. McColm, of the U. S. Rubber Co., and Mr. W. D. Parrish of the Hycar Chemical Co. Both men have been most helpful and cooperative and it is with regret that we accept their resignation because of other demands.

The Committee wishes at this time to thank the officers of the Division for their support and cooperation and also to thank those members of the Division who have been helpful in any way.

G. A. Sackett *(Chairman)* — A. H. Nellen
E. M. McColm — R. A. Schatzel
W. D. Parrish — J. C. Walton
E. W. Oldham

ADVERTISEMENT



Yeah Team! Use HYCAR for greater resistance to abrasion.

See Page 61

Mohawk's Method of Manufacturing Sponge Rubber-Backed Carpets and Rugs

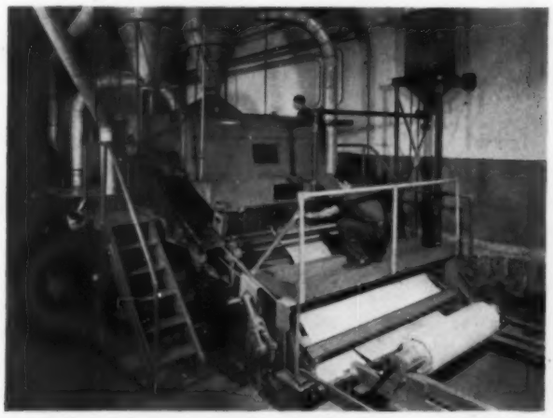
THE new, patented, sponge rubber-backed floor covering made by the Mohawk Carpet Mills, Inc., of Amsterdam, New York, which is sold under the trade name of Moh-Nat, is manufactured by a novel process. No looms or spindles are used and the machine, which is more aptly described as a group of correlated mechanisms, turns out the carpet in one continuous operation at the rate of approximately 10 feet per minute, in widths up to 84 inches.

The process, which has previously been used in the manufacture of automobile carpets, is controlled by National Automotive Fibres, Inc., of Detroit, the concern which recently took over the activities of the Pocono Company at Trenton, N. J. The machine used by Mohawk, however, said to be the only one of its kind in the world, is a development of Mohawk engineers.

Before the carpet-making machine starts its operations, at the conclusion of which there is a finished carpet, ready for use, the raw materials are made ready. These include the hair or wool which is to be used as the pile surface. These must be carefully cleaned and carded. Since the length of the fibres determines the depth of the pile on the finished product, the hair or wool is carefully graded and classified into size, with all foreign matter eliminated.

Stock-dyed wool roving from cards ordinarily used in production of face yarns for carpets is fed into a fiber cutter, chopped into predetermined lengths ranging from 5/32 inch to ½ inch, then blown into a mixing machine. The mixer consists of a large chamber with fans and a revolving wire cage which acts as an agitator and thoroughly mixes the flock. Jute, rayon, and other materials can also be used.

Rubber-coated rolls of burlap, or other open-mesh material, are also prepared. A specially compounded "chemical" rubber is first prepared and then calendered onto burlap which is put into long rolls and transported to the processing room ready to be fed into the continuously operating machine. The rubber coating is approximately 0.045 inch in thickness.



Cement being spread on the face of the burlap seen entering the main flocking unit.

Exit of the main flocking unit. The conveyor is carrying the fabric into the curing oven.

In starting the actual carpet making process, a roll of rubber-coated burlap is lowered on to the machine by an overhead trolley and placed on a special carriage which permits it to unroll freely. The selected fibres, already processed, are fed into the machine by air as the process begins. Adhesive is piped into an automatic feed.

As the machine begins its operation, the burlap is drawn into it, the uncured rubber side down and the uncoated side up. The burlap passes over a roller and then receives an application of adhesive on the uncoated side by means of nozzles. The company uses two types of adhesive to bind the fibres to the burlap, one made with a rubber base and the other with a synthetic resin. A spreader knife spreads the adhesive to the required thickness.

The wet, adhesive-coated material then enters the flocking chamber. The prepared flock, hair or wool as the case may be, which has been blown from the mixer to a bin, is spread in controlled amounts across the width of the machine and allowed to sift down to the adhesive-coated side of the material through two dif-

ferent types of sifters. The material is advanced through this operation by a conveyor which is caused to vibrate in such manner that the fibres stand on end. The fibre sifting operation continues for a distance of approximately 12 feet.

The material, before reaching the end of this chamber, passes a suction device which draws up and returns to the bin all flock which has not become lodged in the adhesive. The "raw" carpet is then drawn out of the chamber and carried up a lattice conveyor to the dryer. At this stage, the rubber-coated side of the material is still approximately 0.045 inch in thickness.

Construction of the Dryer

The dryer, which is 125 feet long and 86 inches wide, is divided into two sections, the first maintained at approximately 310° F. and the second at approximately 260° F. Three circulating fans control the flow of warm air. Approximately 22 minutes is required for the carpet to travel from one end of the dryer to the other. During the drying period, the rubber backing expands from its original thickness of 0.045 inch to a thickness of more than 1/4 inch, becoming cushion-like and springy. At the same time, the flock becomes firmly embedded into the adhesive solution on the other side of the carpet. The dryer, for the records, is a product of the J. O. Ross Engineering Corporation.

After drying, the material is cooled, brushed, lightly steamed and oil sprayed. The oil is applied to replace any of the natural oils which may have been driven out of the fibres while passing through the curing oven. None of the oil remains on the surface of the carpet. After this treatment, the material passes over a long inspection table. Although the material may be stopped by button pressure at any point on the inspection table, the production unit continues in full operation. A special take-up device handles the cloth until the inspection table conveyor begins moving again.

At the end of the inspection table, the material passes over and around a series of tension rolls and over special cutters which trim the carpet to the desired width and remove the excess burlap. This gives the carpet

Exit of the carpet from the ovens. The operators then cut, trim and roll the fabric.

the necessary straight edge so that it may be laid and joined at the seams if desired. To make rugs, the carpeting can be seamed or sealed with latex. After the trimming operation, the finished carpet is rolled into proper lengths and tagged for shipment.

Three operators are employed at the starting end of the huge carpet-making unit, one, the chief operator, stationed at the controls, the second at the cement feeder to make certain that the adhesive flows on to the fabric at the predetermined thickness, and the third overseeing the flock. The speed of the machine may be varied from 2 feet per minute to 22 feet. Speed, temperature, and pressure are all recorded so that uniformity of finished product can be assured.

Protection Against Fire

Protection against fire at any point in the dryer is given by special equipment installed by Walter Kidde & Co. Eleven cylinders containing fire extinguishing chemicals under pressure are connected to the dryer at various points and controlled in such manner that in case of fire chemicals feed into every single part of the dryer.

Vulcanization of Rubber by Sunlight

A UNIQUE method for vulcanizing rubber without the use of sulfur or heat, developed by Dr. David Spence, is covered in U. S. Patent No. 2,234,743. The new method, according to the patent, requires only the use of sunlight or ultra-violet rays and a light-activated substance. The patent has been assigned to the B. F. Goodrich Co.

Rubber latex to be vulcanized under the new method is first treated with a small amount (about 1 per cent) of a light-activated substance like benzoquinone or naphtoquinone. The latex while being stirred is then subjected to direct sunlight or to artifically generated ultra-violet rays equivalent in concentration to that contained in sunlight.

On the other hand, raw rubber in the form of sheets containing the quinone may be exposed to ultra-violet rays. Vulcanization is completed within the space of minutes or several hours, it it is said, depending on the concentration of the ultra-violet rays.

The inventor points out that the discovery that rubber can be so vulcanized is surprising, since light in the presence of air is known to deteriorate rubber. In the new process, however, the addition of the light-activated substance prevents this destructive effect while vulcanization takes place.

An Index to Volume 49 of THE RUBBER AGE will be found facing Page 76 in this issue.

Prices and Method of Distribution of Government-Owned Rubber

FOR the past few months, or ever since the Government announced that the Rubber Reserve Company, subsidiary of the Reconstruction Finance Corporation, would become the sole importer of crude rubber from the Middle East, the rubber manufacturing industry in the United States awaited the prices and terms under which such rubber would become available to the industry.

On August 6th Jesse Jones announced that the Rubber Reserve Company would make crude rubber available to the manufacturing industry at 22½c per pound for No. 1X Ribbed Smoked Sheets, with appropriate differentials for other types and grades, which arrangement was concurred in by Leon Henderson, Director of the Office of Price Administration and Civilian Supply.

On September 13, Mr. Jones supplemented his previous statement and announced the prices at which the various grades and types of crude rubber would be made available to the industry. On the same day, Howard J. Klossner, president of the Rubber Reserve Company, sent a letter to rubber manufacturers outlining the procedure to be followed by the Rubber Reserve Company in distributing rubber to manufacturers. This letter was released by the Reconstruction Finance Corporation on September 29th.

The procedure to be followed in the distribution of government-owned rubber and the prices for the various types and grades follow:

DISTRIBUTION OF GOVERNMENT-OWNED RUBBER

General

1. Rubber Reserve Company will sell rubber to manufacturers ex dock or ex warehouse or F.O.B. cars New York, Boston, Baltimore, New Orleans, Los Angeles, and/or San Francisco, at the option of Rubber Reserve Company, at prices listed on the attached schedule. (See Page 37)

2. Rubber will be sold on a 10 per cent examination and net test weight basis and payment therefor will be required at the time of delivery, by certified check payable to Rubber Reserve Company. It will, therefore, be necessary for manufacturers or their dealer agents to weigh and inspect at point of delivery. No adjustments will be made after delivery and acceptance. Rubber Reserve Company will absorb the cost of the weighing and inspecting in all cases, but if delivery is made ex warehouse, the charge for reweighing and reinspecting shall not exceed 80 cents per ton.

3. Requests for the purchase of rubber should be addressed to Sales Department, Rubber Reserve Company, 811 Vermont Avenue, Washington, D. C., and mailed at least thirty days in advance of the date on which delivery is desired. All such requests must state clearly the type or types of rubber required, the quantity of each type or types, and the desired delivery date. If it is the manufacturer's expectation that the delivery will be taken in several lots, a statement to this effect should be included in the request.

4. The amount of rubber which Rubber Reserve Company will sell to any manufacturer for consumption during any particular month will be governed by the amount of rubber which the manufacturer is permitted to consume, pursuant to the terms of General Preference Order No. M-15 as amended and supplemented, issued by the Division of Priorities of the Office of Production Management on June 20, 1941.

5. Upon receipt of the manufacturer's request, Rubber Reserve Company will issue and forward to the manufacturer, by Registered Mail, a Crude Rubber Purchase Permit, in triplicate, authorizing the manufacturer to receive the amount of rubber to which he is entitled. If it is indicated in the request that delivery is desired in several lots, a permit will be issued to cover each delivery. The permit must be executed in triplicate and delivered to the agent of Rubber Reserve Company at the time the rubber is received. The triplicate copy, which will represent an invoice, will be returned to the manufacturer for his files.

Distribution by Distributing Agent

1. D. D. Haldane, 95 Broad Street, New York, New York, has been appointed as Distributing Agent for Rubber Reserve Company.

2. In order that there may be the least possible dislocation in the usual channels of distribution, it is assumed that most manufacturers will prefer to have dealers act as their agents in purchasing rubber from Rubber Reserve Company, and, in connection therewith, render certain services as has been the custom in the past, such as weighing, inspecting, shipping and financing. However, this procedure is not obligatory and, should they so desire, manufacturers may arrange for their own deliveries, subject to the conditions contained in Paragraph 2 under "GENERAL."

3. In order to avoid unnecessary handling charges, deliveries will be made ex-dock wherever possible.

4. To facilitate distribution by the Distributing Agent, the rubber presently stored in warehouses of the American Dock Company and Pouch Terminal, Inc., New York City, will be used as a stock pile. All distributions to manufacturers will be made from such warehouses in accordance with the established custom

of the trade, and exceptions will be made only when the requested type of rubber is not available. These stock piles, consisting of various grades of rubber deemed adequate to satisfy ordinary consumption demands, will be replenished from time to time by incoming shipments.

5. In cases where the services of a dealer are utilized, the RUBBER MANUFACTURER'S ENDORSEMENT on the reverse side of the permit must be executed by the manufacturer and the permit in triplicate forwarded to the respective dealer. The dealer will then present the permit to the Distributing Agent, who will arrange for the delivery of the rubber described therein. Upon receipt and acceptance of the rubber, the dealer will execute the DEALER'S ACCEPTANCE in triplicate and surrender permit to Distributing Agent, accompanied by a certified check covering purchase price of rubber. The Distributing Agent will then sign permit in triplicate, in space provided therefore, and deliver triplicate copy thereof to the dealer for transmittal to the manufacturer.

Distribution of Government-Owned Rubber

6. Dealers who act as agents for manufacturers and reweigh and reinspect rubber at warehouses should, at the end of each month, render to the Distributing Agent an invoice covering charges for such services on the basis of not more than 80 cents per ton. The Distributing Agent will check the invoice against deliveries and, if found to be correct, indicate his approval thereon and forward the invoice to Rubber Reserve Company for payment.

7. The Rubber Trade Association of New York, Inc., has prepared the following schedule of fixed charges (exclusive of any charges for weighing and inspecting, which will be absorbed by Rubber Reserve Company) to be made by dealers when acting as agents for manufacturers:

750 tons and over	1/16c per pound;	Cash 20 days
100 to 750 tons	3/16c per pound;	Cash 30 days
30 to 99 tons	1/4c per pound;	Cash 30 days
10 to 29 tons	1/2c per pound;	Cash 30 days
Less than 10 tons	3/4c per pound;	Cash 30 days
Case Lots	2c per pound;	Cash 30 days

The foregoing charges (which are for the account of the manufacturer and not Rubber Reserve Company) are intended to apply to the entire volume of rubber handled by any manufacturer during a single month, irrespective of the number of individual deliveries made or the number of dealers involved.

Distribution by Buying Agents

1. It is assumed that the requirements of certain manufacturers will be sufficient in amount to permit acceptance of the entire quantity of rubber covered by one or more bills of lading or warehouse receipts. In any case in which a manufacturer desires quantity of rubber less than that specified by a single bill of lading or a single warehouse receipt, delivery will be made through the Distributing Agent as provided under "DISTRIBUTION BY DISTRIBUTING AGENT" unless Rubber Reserve Company determines otherwise. The same procedure will be followed in any case in which a manufacturer desires to utilize the services of a dealer.

2. In order to avoid unnecessary handling charges, deliveries will be made ex dock whenever practicable. Arrangements will also be made, in so far as possible, to permit manufacturers who operate Eastern Plantations to purchase the rubber produced on their respective plantations for use in their American factories.

3. In certain cases if a manufacturer can accept the entire quantity of rubber covered by one or more bills of lading or warehouse receipts, it is believed the Buying Agents of Rubber Reserve Company can handle the delivery. If the rubber is delivered ex dock to a manufacturer, or to a dealer agent of a manufacturer not represented by the Buying Agent making the delivery, it is assumed that such manufacturer will have its dealer-agent representative present when the rubber is weighed and inspected. If, however, the Buying Agent is the representative of the manufacturer purchasing the rubber, the weighing and inspecting thereof will be arranged for by the Buying Agent. When the rubber is accepted the RUBBER MANUFACTURER'S ACCEPTANCE or DEALER'S ACCEPTANCE on the reverse side of the permit will be executed by the purchaser, and the permit in triplicate, accompanied by a certified check representing the purchase price of the rubber, delivered to the Buying Agent. The Buying Agent will then sign the permit in triplicate in the space provided for the signature of the Distributing Agent, and deliver the original, accompanied by said certified check, to the Federal Reserve Bank of New York. The duplicate copy should be immediately forwarded to the Rubber Reserve Company and the triplicate copy returned to the manufacturer.

4. If it is not possible to make deliveries ex dock to manufacturers represented on the Buying Committee, delivery will be effected ex warehouse, and the rubber so delivered, wherever possible, will be rubber which was originally purchased for the account of Rubber Reserve Company by the Buying Agent whose company is to receive the delivery. In cases of this nature, the Federal Reserve Bank of New York will be authorized to deliver the warehouse receipts to the manufacturer, upon receipt of a certified check covering the purchase price.

5. If the request of a manufacturer who is not represented on the Buying Committee can not be satisfied by a delivery ex dock, or if it is not feasible to employ one of the Buying Agents to handle the transaction, delivery will be made ex warehouse in the manner considered most practicable, preferably through the delivery to the manufacturer, or to his dealer-agent, of a warehouse receipt against a certified check covering the purchase price.

6. In cases where manufacturers arrange for the reweighing and reinspecting of the rubber prior to taking delivery thereof, invoices for the charges, based upon not more than 80 cents per ton, should be rendered monthly and forwarded to the Buying Agent of Rubber Reserve Company who delivered the rubber. After verifying the correctness of the charges, the Buying Agent will indicate his approval thereof and forward the invoice to the Rubber Reserve Company for payment.

Note: A complete list of the selling prices established by the Rubber Reserve Co. on all grades of rubber appears on the following page.

GOVERNMENT SELLING PRICES ON CRUDE RUBBER

(Ex-Dock, Ex-Warehouse or f. o. b. Cars New York City, Boston, Baltimore, New Orleans, Los Angeles and San Francisco, at the option of the Rubber Reserve Company)

Grade	*Price*
#1X Ribbed Smoked Sheets in bales	22½c
#1X Ribbed Smoked Sheets in cases	22½c
#1 Ribbed Smoked Sheets in cases	22 7/16c
#1 Ribbed Smoked Sheets in bales	22 7/16c
#2 Ribbed Smoked Sheets in bales	22¼c
#3 Ribbed Smoked Sheets in bales	22 c
#4 Ribbed Smoked Sheets in bales	21¾c
#5 Ribbed Smoked Sheets in bales	20 5/8c
#1X Thick Pale Latex Crepe in cases	23 5/16c
#1X Thick Pale Latex Crepe in bales	23 c
#1 Thick Pale Latex Crepe in cases	23 3/16c
#1 Thick Pale Latex Crepe in bales	22 7/8c
#2 Thick Pale Latex Crepe in cases	22⅛c
#2 Thick Pale Latex Crepe in bales	22⅛c
#3 F.A.Q. Thick Palish Latex Crepe in cases or bales	21 7/8c
#1X Thin Pale Latex Crepe in cases	23 5/16c
#1 Thin Pale Latex Crepe in cases	23 3/16c
#2 Thin Pale Latex Crepe in cases	22⅛c
#2 Thin Pale Latex Crepe in bales	22⅛c
#3 F.A.Q. Thin Palish Latex Crepe in cases or bales	21 7/8c
#1X Thick Brown Crepe in bales	21 3/8c
#2X Thick Brown Crepe in bales	21 1/16c
#3X Thick Brown Crepe in bales	20 c
#1X Thin Brown Crepe in cases	21 3/8c
#1X Thin Brown Crepe in bales	21 3/8c
#2X Thin Brown Crepe in cases	21 1/16c
#2X Thin Brown Crepe in bales	21 1/16c

Grade	*Price*
#3X Thin Brown Crepe in cases	20 c
#3X Thin Brown Crepe in bales	20 c
#1 Thick Remilled Blanket Crepe in bales	21 3/8c
#2 Thick Remilled Blanket Crepe in bales	21¼c
#3 Thick Remilled Blanket Crepe in bales	21⅛c
#4 Thick Remilled Blanket Crepe in bales	20 5/8c
#1 Thin Brown Remilled Crepe in bales	21¼c
#2 Thin Brown Remilled Crepe in bales	21 1/16c
#3 Thin Brown Remilled Crepe in bales	20 5/8c
#4 Thin Brown Remilled Crepe in bales	20 c
#1 Rolled Brown in bales	17 15/16c
#1 Smoked Blanket	21⅛c
#2 Smoked Blanket	21 c
Claro Brand #1X RSS in cases	22 5/8c
#1X RSS European Estates Trimmings in cases or bales	22 c
Sole Crepe Trimmings and/or #1X Thin Pale Crepe Trimmings in cases or bales	22 7/8c
R.C.M.A. Watermarked Crepe Type #16 in cases	26 3/8c
R.C.M.A. Watermarked Crepe Type #17 in cases	25 7/8c
R.C.M.A. Watermarked Crepe Type #18 in cases	24 3/8c
Sole Crepe (Harrison and Crossfield and R.C.M.A.) in cases	28⅛c*

* Plus import duty

Manufacture of Round Latex Threads in Germany

UNTIL a short time before the beginning of the war no German rubber factory had been producing round latex threads. But in 1938, the Standard Gummiwerke in Cologne took a license from the inventors, Kailich, Schueller and Matzner, of Vienna, under D.R.P. 653,329, referring to a process of producing round latex threads from small rubber bands, and began manufacturing in the same year.

According to this invention, the threads are formed in a continuous working operation by depositing latex on a moving and heated steel band in a thin layer. The rubber band, when already partly vulcanized on the steel support, is removed from this support and is fed directly and continuously into a rotating, twisting device to form the thread. The thickness of the rubber thread produced can be varied either by altering the concentration of the rubber dispersion, or by changing the breadth of the carrier band.

The apparatus contains twelve metal bands, each producing thread at the rate of 50 feet per minute; or, in other words, the complete unit finishes 600 feet per minute. Such a machine is operated by two girls only. Standard Gummiwerke had five units working in 1938 and intended to double this equipment by 1940.

Besides this German factory, licenses have been granted to firms in Switzerland and in Poland. The American rights have been acquired by the United States Rubber Company. It should be mentioned that the main idea of the patent has some likeness to the Gammeter system.

Editorials . . . . . .

Permissible Shipments

MEETING in London on August 19 the International Rubber Regulation Committee fixed permissible exportable amounts from signatory countries at 120% of basic quotas for the fourth quarter of the year. This represents a new high since the advent of the current restriction scheme in June, 1934, and compares with a 100% quota in force during the first nine months of 1941. There is little doubt that the action of the Regulation Committee in raising the quota to the new high rate was intended to encourage cultivating areas to produce and ship their maximum output. There is equally little doubt that practically all rubber now being produced will find its way to the United States.

As pointed out by A. B. Tatistcheff, chief statistician of the Commodity Exchange, Inc., the 120% quota permits the shipment of the impressive total of 1,692,435 tons in 1941 from all countries under the restriction agreement, or a monthly average of 141,036 tons. For the last quarter of the year permissible exports run to 160,470 tons per month. It is interesting to note, as Mr. Tatistcheff does, that this latter figure is more than twice as large as the average monthly permissible exports for the year of 1939.

In the face of the large permissible exports, the question again arises regarding the ability of producing territories to produce and ship their quotas, a point raised in these columns time and again. For the first seven months of the current year the cumulative lag of net exports behind permissible shipments amounted to 82,241 tons, with all major producing countries falling short of their quotas. True, both British Malaya and the Netherlands East Indies almost caught up with their quota allowances for the month of July, but both countries are still considerably behind the overall allowances. If both countries would lift their stringent curbs on native production, the chances are that considerable gains would be made, but hardly sufficient to catch up completely with total permissible exports.

Since there is little doubt that rubber producers have been constantly urged, and are presumably bending their energies, toward producing and shipping their maximums, it is safe to state that actual additional increases in production or shipments of rubber from signatory countries during the next few months will remain limited. It is probably in recognition of these difficulties that the United States Government has curtailed consumption of rubber in this country so as to accumulate as quickly as possible an all-important supply of reserve rubber.

Excise Tax on Rubber

EFFECTIVE October 1st, all manufacturers of rubber products, with the exception of footwear and hospital and surgical goods (and special rates on tires and tubes) fall under the new manufacturer's excise tax of 10% provided for in the Revenue Act of 1941. The manufacturer may pass the tax along to his dealers and distributors either in the form of the tax itself or in the form of higher list prices or lower trade discounts. The method is optional with the manufacturer. All the government is concerned with is the collection of 10% on the selling price of all taxable articles.

Some of the terms of the tax as it affects the rubber manufacturing industry are outlined in the news pages of this issue. As a reading of the article will reveal, definite rulings on this portion of the act are still to be made by the Commissioner of Internal Revenue. We therefore strongly advise any rubber manufacturer, or fabricator of products in which rubber is used, to get a written ruling from the office of the Commissioner before adding the tax on his invoices or deciding any product is non-taxable. This is definitely a case where an ounce of prevention will be worth a pound of cure.

CURRENT NEWS OF THE MONTH

NEW MANUFACTURERS' EXCISE TAX GOES INTO EFFECT ON OCTOBER 1st; RUBBER PRODUCTS, WITH BUT FEW EXCEPTIONS, FALL IN TAXABLE LISTS

THE new manufacturers' excise taxes, recently approved by Congress "to provide revenue, and for other purposes" went into effect on October 1. A 10% tax applies to rubber products, with the exception of tires and tubes, which receives special handling and on which a tax previously applied, footwear, or hospital and surgical goods. The section of the Revenue Act for 1941 which applies specifically to rubber articles reads as follows: "Articles of which rubber is the component material of chief weight, 10 per centum. The tax imposed under this paragraph shall not be applicable to footwear, articles designed especially for hospital or surgical use, or articles taxable under any other provision of this chapter."

The terminology of the section of the act which applies to rubber naturally requires clarification. Accordingly, the Rubber Manufacturers Association promptly appointed a special tax committee which consulted with the office of the Commissioner of Internal Revenue and secured certain interpretations. The point is stressed, however, that these interpretations are subject to written confirmation by the Commissioner and any rubber manufacturer who has doubts on any specific point would do well to secure such confirmation before determining the taxability or non-taxability of any product.

Definition of "Rubber"

The definition of rubber under the terms of the act, as given to the R.M.A. committee, is that the rubber component of any article shall consist of the dry weight of the natural crude rubber content of the article plus 50% of the weight of the reclaimed rubber and hard rubber dust content of that article. It is believed that so-called synthetic rubber will not be considered a part of the rubber component, although no ruling has yet been secured on this point.

The Revenue Bureau has ruled, however, that a rubber article is taxable if the rubber component as described above exceeds in weight any other component in the finished article. In making comparisons, the Bureau will recognize six components as follows: (1) Rubber, plus 50% of the reclaim and hard rubber dust content; (2) Fabric; (3) Metal; (4) Fillers or Pigments; (5) Chemicals and Compounding Ingredients; (6) Reclaimed load, i.e., 50% of reclaim and hard rubber dust.

It must be pointed out at once that if a rubber article is to be non-taxable the rubber component must be less than any other single group, not less than the combination of two or more of such groups. The decision to accept 50% of the weight of reclaim, according to the R.M.A., is subject to proof by the rubber industry that the average rubber content of all reclaim and hard rubber dust is approximately 50%. In breaking down the contents of a rubber article to prove its non-taxability, all materials entering into the production of the finished article must be classified as one the components listed.

Although no definite ruling has been made on the term "rubber article" it is believed that the final definition approved by the Bureau will be an article to which nothing is to be added by way of further manufacture before it is offered for sale or becomes a commercial product. In other words, there is a provision in the Act which states that "no tax (under the chapter involved) shall be imposed with respect to the sale of any article for use by the vendee as material in the manufacture or production of, or as a component part of, an article enumerated in this chapter."

Covers Complete Package

The 10% tax will be applied in accordance with Section 3441 (a) of the Act which states, "In determining, for the purposes of this chapter, the price for which an article is sold, there shall be included any charge for coverings and containers of whatever nature, and any charge incident to placing the article in condition packed ready for shipment, but there shall be excluded the amount of tax imposed by this chapter, whether or not stated as a separate charge." The lease of an article is considered the sale of an article.

The term "hospital and surgical goods" has received the following tentative interpretation: "Any article which was originally designed and is still manufactured, advertised and sold primarily for use by hospitals or surgeons is exempt under this section." For example, surgeon's gloves are exempt from the excise tax, but household gloves fall under its terms.

The definition as applied to "footwear" applies not only to rubber boots and shoes, but also to specific parts, such as soles, heels, strips, taps and like parts. In other words, these products, like footwear itself, are exempt from the tax.

Tax-Free Sales

Under the existing regulations all sales made directly to and for the exclusive use of the United States, any state, territory or the District of Columbia, may be made free of tax provided an exemption certificate is secured from the government involved. In some cases credits or refunds are allowed, these being specifically covered in Sections 3442 and 3443 of the new Revenue Act.

Other interpretations of the Act indicate that inter-company sales may not be used as a basis for establishing taxes and that any taxable article may be sold without tax in the export market, providing the regulations governing such transactions are conformed with. Regulation 46, Section 316-25 lists these regulations.

Method of Collection

The Act also provides a regulation to the effect that whereas manufacturers may collect the tax either by showing it as a separate item on their invoices or in the form of higher prices, distributors and retailers may not collect it in such form, but are obliged to collect it in the form of higher prices, unless they choose to absorb it themselves. This ruling applies in all cases, except where special interpretations have been made on certain classes of merchandise, such as furs, jewelry and cosmetics.

As for tires and tubes, the excise tax on tires has been raised from 2¼ to 5c per pound and on tubes from 4c to 9c per pound. In addition, a floor stocks tax applies on tires and tubes under which stocks in the hands of dealers as of October 1 will be assessed at the rate of 2½c a pound in the case of tires and 4½c a pound in the case of tubes. Camelback, incidentally, is subject to the "rubber articles" tax of 10%.

The 1941 RUBBER RED BOOK is now available. 514 Pages. 6 x 9 Inches. Cloth Bound. $5.00 per Copy.

A.S.T.M. COMMITTEE E-10 APPROVES NEW TEST METHODS

Committee E-10 on Standards of the American Society for Testing Materials on August 25 approved 34 new specifications and tests, acted favorably on 15 revisions of tentative specifications, and approved the publication of 11 tentative revisions of standards. The Committee also reviewed and approved a procedure by which the Society can develop emergency alternative specifications and modifications of standards through expedited committee action. This procedure is of course tied in directly with anticipated national defense needs.

While two new test methods approved on the recommendation of Committee D-11 on Rubber Products are of distinct importance, covering Sampling and Testing of Rubber Latex (D 640—41 T) and Testing Asphalt Composition Battery Containers (D 639—41 T), probably of most interest at the E-10 meeting was the emergency alternate modification of the Standard Specifications for Insulated Wire and Cable (D 27—41). This is the first emergency revision invoked in A.S.T.M. standards and was occasioned by the difficulty manufacturers of wire and cable are having in procuring the type of sheeting specified. Present requirements and the alternate are as follows:

	Lbs. per sq. yd.	Yd. per lb. 40 in. width	Thread Count
A.S.T.M. D 27	0.25	3.60	56 x 60
Alternate (a)	0.225	4.00	60 x 52
Alternate (b)	0.210	4.30	56 x 48

There is a shortage of 3.60 sheeting and while there will be still a shortage of material, with alternates some relief would be experienced. At the same time the quality of the cables will not be altered because of the use of alternates and the production of the furnished material can continue under A.S.T.M. specifications.

The methods of Sampling and Testing Latex cover procedures most urgently needed. Extensive use of the material for adhesives and manufacture of various articles has resulted in the necessity for control tests. The methods are to be employed for sampling and for measuring the variability of normal and concentrated rubber latex. In connection with its recommendations the committee considered the proposed method developed by the Crude Rubber Committee of the Rubber Division, A.C.S.

In presenting its new method for Testing Asphalt Composition Battery Containers (D 639—41 T) the committee stated: "No standardization exists at present in the methods used for testing this type of battery container which is very widely used. Manufacturers and consumers both agree that standardization is badly needed. Subcommittee XXIII of Committee D-11 has worked on the present recommendation for more than a year and the committee feels that the proposed methods represent the best current practice."

Coming Events

Oct. 16. Ontario Rubber Group, University of Toronto, Toronto, Canada.

Oct. 17. New York Rubber Group, Building Trades Club, N.Y.C.

Nov. 3-5. American Institute of Chemical Engineers, Annual Meeting, Cavalier Hotel, Virginia Beach, Va.

Nov. 7. Akron Rubber Group, City Club, Akron, Ohio.

Nov. 14. Ontario Rubber Group, Walper House, Kitchener, Canada.

Dec. 1-6. 18th Exposition of Chemical Industries, Grand Central Palace, New York City.

Dec. 12. New York Rubber Group, Xmas Party, Building Trades Club, N.Y.C.

Dec. 12. Boston Rubber Group, University Club, Boston, Mass.

Dec. 19. Chicago Rubber Group, Xmas Party, Chicago, Ill.

Feb. 5. Chicago Rubber Group, Congress Hotel, Chicago, Ill.

Apr. 20-24. 103rd Meeting, A.C.S., Memphis, Tenn.

Sept. 7-11. 104th Meeting, A.C.S., Buffalo, N. Y. Rubber Division Headquarters: Hotel Lafayette.

The revisions to be incorporated in the Chemical Analysis of Rubber Products (D 297—40 T) "greatly improve the instructions for preparation of samples by making them more specific. They also add an alternate apparatus for making extractions which is smaller and permits more accurate weighing. It is anticipated that this will ultimately replace the large form of extraction apparatus."

Clarification of Questions

The following advices, secured from the Office of Production Management and the Rubber Reserve Company, based on questions submitted by readers of this journal, may prove of general interest:

(1) Liquid latex is a type of crude rubber and as such is subject to General Preference Order M-15. All other types of crude rubber, including guayule, are subject to the order. Related gums, such as balata and gutta-percha, are not subject to the order.

(2) All crude rubber, including latex, will be imported for the account of the Rubber Reserve Co. As yet no sale price for normal or concentrated latex has been established.

(3) Reclaimed rubber is not subject to General Preference Order M-15.

(4) Rubber manufacturers who used less than 10 tons per month on the average during the base period (the twelve months ending April 30, 1941) are temporarily exempt from the curtailment program, but they do not automatically have the right to increase their consumption up to 10 tons per month.

CHEMICAL EXPOSITION WILL CALL ATTENTION TO DEFENSE

Technical problems created by the program of national defense will make the 18th Exposition of Chemical Industries, in Grand Central Palace, New York, December 1 to 6, next, an event of greater importance than any in the long line preceding it. Until now comparatively scant attention has been paid to the persistent and thorough infiltration of chemical products and chemical processes into American industrial life.

World War One revealed a shocking dependence, generally unsuspected up to that time, upon imported chemicals for certain industries. Developments in the present emergency are rapidly disclosing, by sharp contrast, a succession of new products that are not only independent of foreign sources, but also independent of many of the preconceived natural resources. These are coming from the laboratory and the pilot plant, where they have been quietly nourished on the profits of private enterprise. Out of them a bewildering new economy of production is fast emerging.

This dissolving of the familiar industrial scene into a new and unfamiliar one is a repeating phenomenon, but it is being greatly accentuated and sharpened now. It has never been more vividly depicted than at the biennial expositions of the chemical industries, but this year's display holds exceptional promise because of the impact of priorities for critical materials, and the extraordinarily rapid assimilation of substitutes therefore.

Timed at this critical juncture, more than 300 exhibits, representing the highest concentrate of industrial ingenuity, are now being prepared to be assembled from all parts of the country and compacted into more than three acres of floor space, under a single roof, in Grand Central Palace.

This greatest array of chemicals, chemical products, laboratory equipment, processing machinery, apparatus, instruments and materials to be found anywhere in the world today will represent the latest creative ideas and the newest in creative applications, will draw together one of the most influential buying groups of the hour, consisting of chemists, chemical engineers, operating men, executives, and their business associates.

Comprising a highly selective, technically-minded audience, this gathering will study the working principles of new processes and equipment, learn through exhibits and discussions of new applications recently made, and newer ones even now being completed, and they will consult with specialists in many different lines their plans for future applications.

These customary functions of the Chemical Exposition are made doubly important now by industry's dual role, under which it continues a partly curtailed commercial life, while fulfilling contracts under Federal control.

GOODYEAR AND U. S. RUBBER ANNOUNCE DEFENSE MATERIALS

Announcements of new defense materials, somewhat similar in characteristics and use, were made by both the Goodyear Tire & Rubber Co. and the U. S. Rubber Co. within the past few weeks. Both materials are designed to replace the use of metal in many important defense items, such as fuel tanks.

The Goodyear material, which has been named Plioform, is described as a plastic produced by a blending of crude rubber with a rubber resin. The method of processing the new material is still a military secret. According to Goodyear, it can replace aluminum now used in the fuel tanks of planes and combat vehicles, providing greater protection against fuel leakage caused by bullet punctures or crashes.

In announcing the new material, P. W. Litchfield, Goodyear chairman, first explained that the linings of rubber developed to fit into the aluminum shells of fuel tanks to provide self-sealing tanks were successful in that they would almost instantly seal the puncture of a 50-calibre machine gun bullet or a burst of such bullets.

A weakness remained, however, in that the outer shell of the tank was of aluminum, and this metal flared when penetrated by heavy calibre bullets, particularly if the bullets "tumbled" while passing through the tank. This led to the development of Plioform which does not flare under gun fire and will not burst under crash impact as metal tanks are apt to do.

The new U. S. Rubber product, which is known simply as Formula C-102, is made from "fibrous and rubber-like ingredients." In many qualities it surpasses aluminum itself. Under gunfire, for instance, it resists ripping or shattering. It will not crystallize from vibration as do metallic substances and it is also free from corrosion and pinhole formation.

Formula C-102 is slightly thicker than ⅛-inch aluminum sheets as used in tanks, but is still one-third lighter. In addition to its defense uses, it is expected to find many applications in normal industry. One use may be to replace aluminum panels now used in bus and truck body construction.

PERU AND ECUADOR PLANNING INTENSIVE RUBBER CULTIVATION

Plans for making both Peru and Ecuador important cogs in the world-wide rubber cultivation picture were recognized last month, based on events transpiring in both of those countries. The Peruvian program has passed the preliminary stages and attention is now being given to practical growing problems.

According to a report on the Peruvian situation, made in the October issue of *Agriculture in the Americas*, monthly publication of the Office of Foreign Agricultural Relations, by Manuel Sanchez de Aguila, chief of the national government agency established in Peru early in 1941 to cooperate in the Western Hemisphere rubber project, when United States scientists late in 1940 surveyed the possibilities of rubber production in Latin America, they gave careful attention to Peru.

Almost immediately after their visit, the Peruvian government voted an appropriation to begin the production job in a permanent way. Since then two nursery stations have been established, one near the town of Oromina and the other in the Tingo Maria Valley. Rubber seedlings started from native seeds are now growing in these stations and at the end of this year will be grafted with improved disease-resistant strains originating in the Far East.

Important new methods are being encouraged in Peru to make possible the successful production of rubber on a commercial scale, says Mr. Sanchez. The inefficient "rubber ball" method of preparing rubber for sale and shipment will be replaced by the production of smoked sheets of crude rubber. In addition the adoption of modern tapping methods, which preserve both trees and tapping surfaces, will be encouraged.

Development of an understanding between producers and buyers that will assure Peruvian planters of a profitable market for rubber is the "logical next step in the program that is now so well launched," Mr. Sanchez writes. "Meanwhile, our energies are directed to development of . . . higher yields and lower costs for rubber production in this Hemisphere."

As for the status of Ecuador, the formation of a mission to study the agriculture of that country and to formulate with the government a program of agricultural diversification with special emphasis on crops for which there is normally a good demand in the export market, was announced on September 26 by the Department of Agriculture.

As part of its program to develop the production of tropical agricultural products in Latin America, the Department of Agriculture has already made preliminary surveys of rubber-growing possibilities. These resulted in the establishment of an Ecuadoran agricultural experiment station program and in the establishment of the new mission. Specific items for consideration of the mission will be the development of plantation rubber production.

Bullets from powerful 50-calibre machine guns were fired into the aluminum and plioform fuel tanks shown above. As may be seen, the bullets inflicted severe damage on the aluminum tank, but did not flare in the case of the plioform tank. See story in adjoining column.

NAMES IN THE NEWS

RALPH F. WOLF, for many years associated with the B. F. Goodrich Co., and more recently connected with the Standard Oil Development Co., has been "loaned" by the latter company to the defense effort. MR. WOLF is now acting as assistant staff expert in the Synthetic Rubber Branch, Chemicals & Allied Products Branch, Office of Production Management.

DAVID L. SHOEMAKER, associated with R. H. Macy & Co. for many years as a buyer for various products, including rubber footwear, has joined the I. B. Kleinert Rubber Co. where he will assist Vice-President GEORGE K. GUINZBURG in the operation of the newly-created shoe department.

BOYD E. BRIDGWATER, vice-president of the Bridgwater Machine Co., Akron, has been named a member of the new Small Business Committee of the O. P. M., the function of which is to spread defense contracts through thousands of small factories throughout the country.

WILLIAM L. PITCHER, treasurer of the Easthampton Rubber Thread Co. and the United Elastic Corp., both of Easthampton, Mass., was recently tendered a surprise dinner by members of both organizations to commemorate his fiftieth year of service with the companies.

JOSEPH F. WOGAN, who has been associated with the United Shoe Machinery Corp. since 1904, and who has served as assistant general manager for the past several years, was elected general manager of the company on September 10 to succeed the late HAROLD A. OSBORNE.

WALLACE W. LOCKWOOD, assistant advertising manager of the Taylor Instrument Companies, Rochester, N. Y. since 1939, and a member of the advertising department since 1932, has been appointed advertising manager to succeed ELMER E. WAY, resigned.

R. A. HUDSON, associated with Goodyear in various executive positions since joining the former Goodyear Zeppelin organization, has been appointed general superintendent of the new air parts plant in Arizona which will be operated by the Goodyear Aircraft Corp.

STANLEY BRACKEN, engineer of manufacture for the Western Electric Co., and associated with that company for the past 29 years, has been appointed general manager of manufacture of the company, a newly-created post made necessary by an increase in manufacturing activities.

LAWRENCE K. BLACKMAN, assistant treasurer of Farrel-Birmingham Co., Inc., Buffalo, N. Y., has retired after 43 years of continuous service with that company. He started in 1898 as a bookkeeper at the Ansonia, Conn., office.

WILLIAM "BILL" MASON, formerly assistant to the head of the Detroit office of the *New York Times,* has joined the General Tire & Rubber Co. as director of public relations.

GORDON A. MCLEAN, head of the Interstate Welding Service, of Akron, is recuperating from a motorboat accident suffered last month on Turkeyfoot Lake when bilge gas exploded. MRS. MCLEAN, injured in the same accident, has been discharged from the hospital.

WALTER DUTTON, secretary of the Commodity Exchange, Inc., since its formation in 1933, retired on September 30. He served as secretary of the Rubber Exchange of New York from its formation in January, 1926, until it was merged into the Commodity Exchange in 1933.

D. G. WELCH recently resigned as safety engineer for the Hewitt Rubber Corp., Buffalo, to accept a similar position with the Airplane Division of the Curtiss-Wright Corp., also at Buffalo.

ROBERT S. WILSON, vice-president of the Goodyear Tire & Rubber Co., Akron, was recently elected president of the Board of Trustees of Western Reserve Academy. He has been a member of the Board since 1936.

ARTHUR P. KROEGER, assistant general branch manager of the Los Angeles office of the Monsanto Chemical Co., has been promoted to assistant manager of sales in charge of intermediates of that company, with headquarters in St. Louis. He joined Monsanto in 1929 as a chemist in the Rubber Service Dept. He is succeeded in Los Angeles by CHARLES L. FETZNER, formerly of the San Francisco office.

T. W. SMITH, JR., secretary-treasurer and general manager of the Sun Rubber Co., Barberton, Ohio, was elected president of the Toy Manufacturers of the U. S. A. at the 25th annual convention of that organization, held in New York City the week of September 29.

LT.-COL. B. J. EATON, associated with the rubber industry in England since 1906, and the author of numerous works on rubber cultivation, has been awarded the Colwyn Gold Medal for 1941, one of the highest honors bestowed on members of the rubber industry.

Changes Made in O.P.M.

Several changes in the personnel charged with duties affecting rubber and rubber products have taken place within the Office of Production Management since our last issue, as follows:

Leon Henderson, head of the Civilian Supply Division and also of the Office of Price Administration, became virtually head man of the rubber industry under an order of the Supply Priorities and Allocations Board on September 10 which placed automobiles, rubber and other consumer durable goods industries under the Civilian Supply Division. Decisions regarding prices and priorities for the rubber industry as they affect civilian needs will henceforth be handled by this division. Mr. Henderson, incidentally, was head of the rubber code in N.R.A. days.

One of Mr. Henderson's first acts was to appoint Barton Murray, retired economist, to take charge of the Rubber and Rubber Products Branch of the Civilian Supply Division. Mr. Murray, too, served the government during N.R.A. days, although he was not directly connected with rubber activities. Richard May, who was working with the rubber division, returned to work in the research division. As previously reported, both W. L. Finger and H. S. Rogers have resigned from the division. F. W. Gardner, formerly associated with the Rubber and Cork Division, is now head of the Cork and Asbestos Branch of the O.P.M. Materials Division.

The following members were appointed to the Sub-Committee on Rubber Footwear and Rubber Materials for Shoes: H. S. Marlor (U. S. Rubber), C. L. Muench (Hood Rubber), C. H. Baker (Goodyear Footwear), H. S. Post (Goodyear Tire), and M. Bernstein (Panther-Panco).

Cheyney Joins Akron University

La Verne E. Cheyney has been appointed assistant professor of chemistry at the University of Akron. Dr. Cheyney, who was graduated from the University and took an M.S. degree at the University of Pennsylvania and a Ph. D. at Ohio State University, will be in charge of the University's courses in rubber chemistry. These courses were formerly given by Dr. H. I. Cramer, who resigned to join Sharples Chemicals, Inc., at Philadelphia. Dr. Cheyney has been employed in the laboratories of the B. F. Goodrich Co., Pittsburgh Plate Glass Co. and the National Aniline & Chemical Co. For the past three years he has been with Goodyear as a research chemist. Other new appointments at the University include that of Dr. Vaughn W. Floutz and Walter Hausch as instructors in chemistry.

HERBERT P. CROXTON, secretary-treasurer of the Massillon Rubber Co., Massillon, Ohio, has been named associate chairman of the Massillon 1942 Community Fund Campaign.

JONES' REPORT REVEALS COMMITMENTS ON RUBBER

The latest report submitted to the President and the Congress of the United States by Jesse H. Jones, Federal Loan Administrator, on September 15, as of September 13, reveals that the Rubber Reserve Company has made commitments of $210,000,000 as of that date. The full text of the report, as it affects the rubber industry, follows herewith:

In aid of the defense program, the R. F. C. has made commitments aggregating approximately $3,902,952,578. These include the creation on June 28, 1940, of the Rubber Reserve Company to acquire a reserve supply of raw rubber. $5,000,000 was subscribed to the capital stock of this Company, and with the approval of the Reconstruction Finance Corporation it has agreed with the International Rubber Regulation Committee, which controls the world output of raw rubber, to purchase up to 430,000 tons of far eastern crude rubber, costing approximately $190,000,000, and in addition has agreed to purchase up to 30,000 tons of Brazilian rubber in the years 1941, 1942 and 1943 at a maximum cost of approximately $20,000,000.

Effective June 23, 1941, under arrangements worked out through the cooperation of the British and Dutch governments and the International Rubber Regulation Committee, the Rubber Reserve Company has become the sole buyer for crude rubber exported to the United States from the Far East. The purpose of this action is to accelerate the accumulation of the government reserve supply and to facilitate distribution to the manufacturing industry for defense and commercial requirements in accordance with programs established by the Office of Production Management and the Office of Price Administration and Civilian Supply.

On September 13, 1941, 140,318 tons had been delivered, 66,391 tons were in transit and 150,601 tons awaited shipment. Of the total purchased, 157,972 tons were contracted for prior to the establishment of the central buying plan and 199,338 tons since such establishment. Through the operation of central buying the balance of the 430,000 ton reserve supply should be accumulated by June 30, 1942.

Rubber is currently being purchased at the top of the price range specified in the agreements with the International Rubber Regulation Committee which is 18½c U. S. Currency per pound for Standard IX Ribbed Smoked Sheets, F. O. B. transoceanic ships, Asiatic ports.

Through the Defense Plant Corporation, the Reconstruction Finance Corporation has authorized lease agreements for the construction and equipping of four synthetic rubber plants with major rubber manufacturing companies. These plants will have an initial capacity for the production of 10,000 tons each per annum.

New Type Parachute Seat

A new type of parachute seat, recently perfected by the B. F. Goodrich Co. for military aviators, is constructed of latex

sponge rubber. Pressure in this cushion can be easily adjusted at the valve by the user. This simple adjustment method is important in high altitude flying due to reduced air pressure found in the substratosphere.

Another Plant for Louisville

The City of Louisville, Kentucky, seems destined to become one of the world's greatest centers for the production of synthetic rubber. As previously announced, DuPont is building a neoprene plant in that city with an initial output of 10,000 tons per year and Goodrich is constructing a plant for the manufacture of Koroseal with approximately the same annual output. Now comes word that the Hycar Chemical Co., the new name recently given to the Hydrocarbon Chemical & Rubber Co., will locate the new plant it will build and operate for the government, also with a capacity of 10,000 tons per year, in the same city. Hycar signed a contract with the Defense Plant Corporation for the construction of the new plant on September 19. The contract provides $2,750,000 for construction of the plant. Hycar's plant in Akron, now being enlarged, will shortly produce synthetic rubber at the rate of 7,000 tons a year.

Arrange Battery Program

The Association of American Battery Manufacturers, Inc., of which V. L. Smithers, of Akron, is Commissioner, has arranged a tentative program for its 17th Annual Convention, to be held on Thursday and Friday, October 30 and 31, at the Palmer House, in Chicago. At the suppliers session, to be held on Thursday afternoon, A. S. Basil (U. S. Rubber) will discuss rubber separators and R. Reppert (American Hard Rubber) will talk on battery cases. Other reports will be made on sulfuric acid, oxides, sealing compounds, etc. Included among the papers to be given at the Friday morning technical session is one on the "Effect of Microporous Hard Rubber Separator Characteristics on Battery Separators," by G. E. Hulse of the U. S. Rubber Co.

RUBBER STOCKS DESTROYED IN FIRESTONE PLANT FIRE

Tremendous losses through the destruction of a huge stock of crude rubber and latex, as well as quantities of other defense materials, amounting to approximately $12,000,000, according to newspaper reports, were sustained by the Firestone Rubber and Latex Co., a subsidiary of the Firestone Tire & Rubber Co., by virtue of a fire which broke out on October 11 at its Fall River, Mass., plant. The fire, which is reported to have swept four of the company's eight buildings, raged for fourteen hours before being brought under control.

According to the *New York Times*, nearly 20,000 tons of rubber and latex, stored at the plant by arrangement with the government as a reserve for emergencies, were destroyed. This stock, amassed over a year's time and valued at $9,000,000, filled the main building of the plant, a stone structure six stories high and 600 feet long. Other stored goods believed burned included gas masks, barrage balloons, self-sealing solutions and machine gun clips. One of two gas mask buildings was completely destroyed.

The fire started at about 11 o'clock on the night of October 11 on the third floor of a five-story brick building. According to workmen near the start of the conflagration, one of the large curing ovens, used to vulcanize automobile seat cushions, flared up—not an unusual occurrence—but they were unable to control the blaze which spread rapidly to the other vulcanizers and then to the walls and floors. No sabotage is suspected.

According to J. E. Trainer, Firestone vice-president, much of the manufacturing operations will be resumed promptly, but the fire will make about 2,000 of the plant's 3,200 employees idle until new buildings can be constructed and machinery purchased or repaired. The Firestone buildings were formerly the mills of the American Print Works, one of the largest cotton textile companies in the world. Firestone took possession late in 1937.

Ration Koroseal-Treated Fabrics

A rationing system, designed to guarantee widest possible distribution of amounts of Koroseal-treated fabrics which were on hand prior to the recent government order placing the production of Koroseal, the polyvinyl chloride product developed by Goodrich, under mandatory priority, was announced on October 11 by Comprehensive Fabrics, Inc., of New York City, distributors of the synthetic to licensed firms in various fields. Rationing is effective at once and will be made on the basis of sales during the past year. It will remain in force until increased production of Koroseal is made possible.

OUTING AND MEETING HELD BY ACTIVE CHICAGO GROUP

The Chicago Group, Rubber Division, A.C.S., has witnessed considerable activity in the past few weeks, what with a golf outing and dinner dance held at the Pickwick Golf Club in Glenview, Ill., on September 20, and a technical meeting held at the Congress Hotel in Chicago on October 10. Arrangements for the next two meetings have also been made.

The outing, attended by over 135 members and guests, was a successful affair. In addition to the golf contest, there were a number of other activities, including softball, tennis, dancing, etc. Special entertainment was also furnished. The following concerns made the entertainment portion and prizes of the golf contest possible:

Percy H. Arden, Albert, American Zinc, Binney & Smith, Cabot, Dearborn Chemical, DuPont, Farrel-Birmingham, French Oil Mill Machinery, Genseke, Herron & Meyer, Holmes Bros., International Smelting, Kraft Chemical, Mepham, Muehlstein, Monsanto, Maywood Mold, Midwest Rubber Reclaiming, Naugatuck Chemical, N. J. Zinc, Philadelphia Rubber Works, Stewart Bolling, Schulman, Taylor Instrument, Titanium Pigment, Tagliabue, Vanderbilt, Wishnick-Tumpeer, Xylos Rubber.

Meeting Features Motion Pictures

At the meeting held on October 10, dinner was served to approximately 275 members and guests. After dinner, Andrew Hale of the Farrel-Birmingham Company presented two motion pictures, "Robots and Rubber" and "Rubber at the Rouge." These films, depicting the use of pelletized rubber and the manufacture of tires at the Ford plant, respectively, were well received. The group also arranged tickets for a number of members for the Northwestern-Wisconsin football game, held in Chicago on Saturday, October 11.

At the meeting it was announced that the group has arranged its annual Christmas Party for Friday evening, December 19, in the Gold Ballroom of the Congress Hotel in Chicago. Bruce Hubbard is chairman of the event and is planning a dinner-dance and card party. The group will have its own orchestra present and a complete floor show will be given. Ladies, of course, are invited.

It was also announced that the next technical meeting of the group will be held at the Congress Hotel on February 5. Dr. A. A. Somerville, of the R. T. Vanderbilt Co., will present a paper on "Sunlight Aging Tests." Further information about these meetings can be secured from the chairman of the group, Dr. H. A. Winkelmann, c/o Dryden Rubber Co., 1014 Kildare Ave., Chicago, or the secretary-treasurer, B. W. Lewis, c/o Wishnick-Tumpeer, Inc., Tribune Tower, Chicago.

Ontario to Hear Ball

John Ball, of the R. T. Vanderbilt Co. and editor of the *Vanderbilt News*, will be the principal speaker at a meeting of the Ontario Rubber Section of the Canadian Chemical Association to be held on Thursday, October 16, at the University of Toronto in Toronto, Canada. He will speak on "The Effect of Temperature on the Sunlight Deterioration of a Rubber Compound." W. B. Wiegand, of the Columbian Carbon Co., is scheduled to address the November meeting of the group, which will be held on Friday, November 14, at the Walper House in Kitchener, Ontario.

Morenci Plant Reopened

The plant of Morenci Rubber Products, Inc., at Morenci, Mich., which was almost completely gutted by fire last May, has been completely rebuilt and was formally reopened on September 12. A new modern type building, 200 feet long and 150 feet wide, has been constructed in what is believed to be near-record time. The new factory contains 9,000 more square feet than the old and allows for an increase of approximately 30% in production. Arthur A. Bronson is head of the Morenci company.

Resume Trading on Exchange

Trading in rubber futures on the Commodity Exchange for the sole purpose of liquidating outstanding contracts and under a maximum trading price of 22½c a pound was resumed on September 15 with the approval of Leon Henderson, Administrator of the Office of Price Administration. The 22½c figure is the base price recently fixed by the Rubber Reserve Co. for the sale of crude rubber to manufacturers. Trading in rubber futures was suspended on August 13.

Change Corporate Name to Hycar

The corporate name of the Hydrocarbon Chemical & Rubber Co., Akron, Ohio, jointly-owned enterprise of the B. F. Goodrich and the Phillips Petroleum companies, has been officially changed to that of the Hycar Chemical Co. No change has been made in personnel, plans or policies. Hycar Chemical is now operating a synthetic rubber plant in Akron and is building another, to be operated for the government, at Louisville, Kentucky.

Rubber Trade Moves Offices

The offices of the Rubber Trade Association of New York, Inc., have been moved from 95 Broad Street to Room 1100, 15 William Street in New York City. The new telephone number is WHitehall 3-1275. The Distributing Agent for the Rubber Reserve Company, D. D. Haldane, is also located at the William Street address.

NEW YORK RUBBER GROUP TO HEAR CONTEST PAPERS

The three prize-winning papers in the 1941 Papers Contest of the New York Group, Rubber Division, A.C.S., will be presented at the next meeting of that group, to be held on Friday, October 17, at the Building Trades Club, 2 Park Avenue, New York City.

The titles of the papers are: (1) *Economics of the Use of Neoprene Reclaims;* (2) *Manometric Test for Oxygen Absorption by Vulcanized Rubber;* (3) *Cold Vulcanization of Rubber Under Stress.* Although the authors have been advised of their success, their names will not be revealed publicly until the meeting itself. Of the other papers submitted in the contest, three received honorable mention. Judges of the contest were: H. L. Fisher (U. S. Industrial Chemicals); Charles R. Haynes (Binney & Smith); and Dr. William C. Geer.

In addition to the prize-winning papers, the meeting will also feature the two Farrel-Birmingham sound movies, "Robots and Rubber" and "Rubber at the Rouge." First presented at the St. Louis meeting of the Rubber Division, these films have since been shown before two or three local groups. This, however, will be their first presentation in the New York area.

The meeting will be started promptly at 4:00 P.M. Dinner will be served at 6:30 P.M. Tickets can be secured from and reservations made with B. B. Wilson, secretary-treasurer of the group, c/o *India Rubber World*, 420 Lexington Avenue, New York City. Tickets are $2.00 each. Preference may be expressed for meat or fish dinners.

At a meeting of the Executive Committee of the group, held in New York City on September 23, it was decided to hold the annual Christmas Party on Friday evening, December 12. A December 1st deadline was established for the acceptance of new members for the 1941 season. As in the past, tickets to nonmembers for the Christmas Party will sell at a higher price than those for members.

Estimate Research Expenditures

Manufacturing industry throughout the nation will spend an unprecedented $117,490,000 for research this year, according to a statement made on October 6 by Robert I. Lund, Chairman of the Committee on Patents and Research of the National Association of Manufacturers. The statement was based on a survey conducted by Dr. Karl T. Compton, president of M.I.T. and Chairman of the Association's Research Advisory Committee. A summary of the survey indicates that 26 rubber manufacturers, with total gross sales of $198,302,000, will spend $1,919,000, or an even 1% of gross sales, for research. The general chemical industry will spend 2.4% of gross sales of the companies reporting.

Reclaimed

RUBBER

LIKE NEW RUBBER

Needs

REINFORCEMENT

MICRONEX

Beads or Compressed

A COLUMBIAN COLLOID

BINNEY & SMITH CO. • COLUMBIAN CARBON CO.

DISTRIBUTOR MANUFACTURER

RECLAIM REINFORCEMENT

In compounding reclaimed rubber produced from whole tires it is necessary to estimate 60% as rubber substance and of the remainder at least 10% as carbon black. Additional black is required, however, to revitalize.

As a general suggestion add one-quarter of one pound of Micronex for every pound of whole tire reclaim in stocks which are designed to meet abrasion, or which require good all-around reinforcement.

In other words, reclaimed rubber requires the addition of some 25% of Micronex for reinforcement, just as a loading of 50 to 60% is required with natural or synthetic rubber.

Effective compounding of reclaimed rubber involves the use of proportionally more, rather than less, Micronex.

BINNEY & SMITH CO. • COLUMBIAN CARBON CO.

DISTRIBUTOR MANUFACTURER

MICRONEX MEANS MORE MILEAGE

BUFFALO HEARS TALKS ON NEOPRENE AND DISPERSIONS

A talk on the synthesis and application of neoprene latex, by Benton Dales of the Rubber Chemicals Department of DuPont, and one on the dispersions of rubber, by Ray Nelson of the Naugatuck Chemical Division of U. S. Rubber, featured the meeting of the Buffalo Group, Rubber Division, A.C.S., held at the Hotel Lenox in Buffalo on October 3rd. Approximately 45 members and guests were in attendance.

In his talk on neoprene, Mr. Dales emphasized the technical and industrial developments which have led to the present important place of that material in manufacturing processes. He pointed out specific needs which neoprene is now meeting, and exhibited a number of products made with it.

Mr. Nelson's talk was an up-to-date discussion of dispersions of crude and reclaimed rubber by the procedures laid down in the Pratt patents. He stressed the point that advanced technical control in the production of dispersions results in a uniform product. He, too, exhibited several samples of articles utilizing the advantages of dispersions. Mr. Nelson's paper will appear in an early issue of RUBBER AGE.

The next meeting of the group will be held some time in November. Michael Berman, technical superintendent of the Hewitt Rubber Corp., of Buffalo, is serving as program chairman for that meeting. The Nominating Committee to present a slate of officers for the 1942 season will be designated at the meeting.

TALK ON RUBBER FEATURES MEETING OF BOSTON GROUP

A talk on "Pertinent Facts About Imported, Home Grown and Home Made Rubber," delivered by Dr. Ernst A. Hauser, associate professor of chemical engineering at the Massachusetts Institute of Technology, featured the meeting of the Boston Group, Rubber Division, A.C.S., held at the University Club in Boston on October 3rd. An interesting discussion of the present state of the war, given by Cedric Foster, war correspondent and news commentator of the Mutual Broadcasting Network, was also part of the program. Approximately 145 members and guests were in attendance.

In his talk, Dr. Hauser outlined the quantities of imported and home-made rubbers available, classifying the latter as synthetics and reclaims. He stressed the fact that the seriousness of the rubber situation in this country could be overcome only by either getting sufficient stocks from the Middle East rapidly or resorting to some other expedient, such as the immediate cultivation of guayule on a wide scale.

On the question of guayule, the speaker stated that the guayule bush would yield rubber after its first year of growth, but stressed the point that it was advisable to allow it to reach at least four years maturity. He also stated that if the guayule bush was not harvested until ten or fifteen years after planting it still contains its maximum quantity of rubber, or, in other words, unlike the rubber tree guayule reaches its maximum yield in only a few years but maintains its maximum yield through its entire life. He urged immediate attention to the possibilities of this domestic plant.

The second speaker, Mr. Foster, spoke on the war as it is being conducted by Germany in relation to the famous von Schiefflin plan. He stated that at present Russia could be likened to Hitler's dinner, that is, Kiev, Leningrad and the Ukraine being the hors d'ouevres; Moscow representing the fish course; and the great Volga River Valley being the meat course. After this talk, as well as following the first one, A. A. Glidden, of the Hood Rubber Co., conducted a question period, with much important data on current crude rubber consumption being brought to light.

During the meeting a Nominating Committee was named to present a slate of officers to be voted upon at the next meeting of the group, which will be held on December 12. Members of the committee include James C. Walton (Boston Woven Hose) as chairman, and E. H. Krismann (DuPont) and George Warren Smith (Barrett).

Homogeneous Films

A method of preparing cements containing both rubber and neoprene in any desired proportions, without coagulation of the rubber or the neoprene, is revealed in a recently issued patent. It consists of dissolving the rubber in gasoline and the neoprene in amyl acetate, butyl acetate, or butyl propionate, and then mixing the two solutions. The two solutions can be mixed, according to the patent, although it is impossible to dissolve a mixture of rubber and neoprene in a mixture of the two solvents.

Detroit Hears Frank Carman

Frank Carman, staff expert, Synthetic Rubber Branch, Chemicals and Allied Products Branch, Office of Production Management, was the principal speaker at a meeting of the Detroit Rubber and Plastics Group, held on October 3 at the Hotel Detroit-Leland in Detroit. Mr. Carman discussed the "Status of Synthetic Rubbers" and outlined the procedure for handling priorities, particularly as applied to rubber, used by the Office of Production Management. This address is reproduced in full elsewhere in this issue. The Farrel-Birmingham movies, "Robots and Rubber" and "Rubber at the Rouge," were presented at the meeting by Andrew Hale.

NEW OFFICERS ELECTED BY RHODE ISLAND RUBBER CLUB

The following officers for the 1941-42 season were elected by the Rhode Island Rubber Club at a meeting held at the Metacomet Country Club, in East Providence, R. I., on September 26:

President, L. K. Youce (Firestone Rubber & Latex Products Co.); *Secretary-Treasurer,* L. K. Morrow (Anaconda Wire & Cable Co.); *Executive Committee,* John Marshall (Collyer Insulated Wire), F. H. Springer (Davol), S. L. Lake (Respro), Daniel Rhee (Carr Mfg.), J. H. Christopher (Titanium Pigment), Harry Schlosser (American Wringer), H. E. Murch (Goodyear Footwear), A. R. Nichols (U. S. Rubber).

The Nominating Committee consisted of E. L. Hanna (Davol), chairman; Charles Haynes (Binney & Smith); Fred Fitzpatrick (Respro).

Winners of the golf tournament, in which 34 members and guests participated, were: *Low Gross,* Del Gifford; *2nd Low Gross,* Ed Colligan; *Low Net,* Francis Jacoby and Sam Tinsley (tied). Six players tied for the blind bogey prize, with prizes going to Joe Breckley and H. T. Mason on a draw. All prizes, including one door prize, were given by the group from funds in the group's treasury.

At the dinner, attended by approximately 80 members and guests, entertainment was furnished by Harry Scheer who performed "feats of magic and deception beyond belief of the human mind."

Pick Buffalo Headquarters

Burt W. Wetherbee, of the Globe Woven Belting Co., Inc., has been appointed by the Western New York Section of the American Chemical Society to take charge of local affairs for the Rubber Division insofar as the 104th Meeting of the Society is concerned. Mr. Wetherbee advises that he has selected the Lafayette Hotel in Buffalo as headquarters for the Division. The 104th Meeting will be held in Buffalo the week of September 7, 1942. The next meeting of the Society, the 103rd, will be held at Memphis, Tenn., the week of April 20, 1942. By decision of the Executive Committee, the Rubber Division will hold its meeing in Memphis in conjunction with that of the parent society.

Akron Meets November 7

The first meeting of the 1941-42 season of the Akron Group, Rubber Division, A.C.S., will be held at the Akron City Club on November 7. Dr. T. H. Troller, director of the Daniel Guggenheim Airship Institute, will speak on "Aeronautic Research and Military Aviation." D. G. Benson, of the B. F. Goodrich Co., is secretary-treasurer of the group.

CANADIAN NEWS

H. C. Jeffries, president of the Viceroy Mfg. Co., Ltd., Toronto, has been appointed president of the government-owned Fairmont Co., Ltd., which is the sole importer of crude rubber into Canada. Mr. Jeffries succeeds W. A. Eden, president of Dominion Rubber, as the head of Fairmont. The Fairmont offices were recently moved from Montreal to Toronto to better perform its functions.

Consumption of crude rubber in Canada for civilian purposes will be reduced to 70% of the monthly average used in the year ended on May 31, 1941, under an order issued by Allan H. Williamson, who was appointed to serve as Silk and Rubber Controller under Controller General R. C. Berkinshaw last month. Mr. Williamson is vice-president of Wood, Gundy & Co., Ltd., Vancouver. The object of the curtailment is to build up a reserve of 50,000 tons of rubber in the Dominion by the end of next March.

According to Mr. Williamson, the reduction will be gradual, starting with a 10% cut in October and 5% additional for each of the following months until the full 30% cut is reached next February. A special advisory committee will advise Mr. Williamson's office as to the allotments to fabricators on the new restricted basis. All war needs of rubber will be supplied first, after which releases will be made to dealers. The surplus, if any, will be placed in storage against future requirements and emergencies.

The following were appointed to the Advisory Committee: James I. Simpson (Dunlop), Wm. H. Funston (Firestone), Paul C. Jones (Dominion), Harold C. Jeffries (Viceroy), A. G. Partridge (Goodyear), George W. Sawin (Goodrich), J. Godfrey Smith (Federal Wire & Cable). Mr. Simpson will act as chairman of the committee.

Sole right to buy or import rubber is now in the hands of the Fairmont Co., Ltd., which will allot rubber to processors according to instructions from Mr. Williamson's office. Prices to the processors will be fixed by the company with the approval of several of the Canadian Government's war-time agencies. All previous agreements between the Fairmont Co. and the Canadian rubber companies are cancelled by the new orders.

Production and development heads of Goodyear Tire and Rubber Company factories from all parts of the world met in Canada recently at the firm's New Toronto plant for the first time in history. Manufacturing problems arising from war needs were the topics principally discussed. Officials in attendance included W. J. Condon, Sydney, Australia; E. T. Ruffner, Java; F. J. Carter, Brazil; R. L. Patrick, Argentina; and a number of executives from the main plant at Akron.

According to a recent statement made by A. G. Partridge, president of Canadian Goodyear, the company's sales for the first nine months of the year are considerably greater than for the same period in 1940.

"The large turnover," Mr. Partridge said, "has effected our profits very satisfactorily, even though an ever increasing share of our business is for the government and in spite of greatly increased taxes."

This is taken to mean that stockholders may expect 1941 earnings to exceed last year's $4.25 a share on the common and raises hopes for an additional extra dividend this year.

C. S. Band, vice-president of Gutta Percha and Rubber, Ltd., Toronto, was elected a vice-president of the Canadian Chamber of Commerce at the annual meeting held recently at the Seigniory Club, Montreal.

George W. Sawin, until recently vice-president and general manager of the B. F. Goodrich Rubber Co. of Canada, Ltd., has been named president of that concern. Mr. Sawin succeeds John L. Collyer, who becomes chairman of the board of directors of the Canadian company in addition to being president of the parent company at Akron, Ohio.

Mr. Sawin who has been general manager for the past five years has been with the Goodrich organization for twenty-nine years. He is president of the Rubber Association of Canada and a member of the Dominion's rubber advisory committee.

B. M. Costello, factory manager, has been given the additional title of vice-president.

Canadian rubber chemists attending the fall meeting of the American Chemical Society in Atlantic City included Dr. Norman S. Grace, Dunlop Tire and Rubber Goods Co., Toronto; Beverly Lewis, British Rubber Co. of Canada, St. Laurent, Quebec; J. R. Holmes, Canadian Industries, Ltd., Toronto; and George A. Lee, Canadian Industries, Ltd., Montreal.

Among the contracts in excess of $5,000 granted by the War Supply Board, Ottawa, to Canadian rubber manufacturers during the period July 15 to August 19 were the following: *For personal equipment,* Dominion Rubber Co., $100,000 and $7,100; B. F. Goodrich, $53,550, $21,300 and $14,700; Kaufman Rubber Company, $6,200 and $5,874; Viceroy Manufacturing Company, $6,846; Miner Rubber Company, $41,250 and $86,000. *For clothing,* Dominion Rubber, $30,006; Viceroy Manufacturing, $81,911; and Tower Canadian, $10,300. *For land transport,* Firestone, $266,585, $36,700 and $102,356; Goodyear, $185,188 and $91,398; Dunlop, $150,283, $46,067, $18,081 and $135,124; Goodrich, $21,094 and $17,408; Gutta Percha, $5,825. *For aircraft equipment,* Dunlop, $25,954 and $5,687; Firestone, $26,575; Dominion, $10,300 and $5,270; Goodyear, $15,950; Goodrich, $23,819; and Seiberling, $5,432. *For munitions,* Viceroy Manufacturing, $60,107 and $6,090.

A.S.M.E. SUB-DIVISION PLANS PROGRAM FOR DECEMBER MEETING

A tentative program for the December meeting of the Rubber and Plastics Sub-Division of the American Society of Mechanical Engineers, to be held in New York City, at a time and place yet to be designated, has been announced by Dr. Felix L. Yerzley, chairman of the sub-division. As on previous meetings, the program will consist of four papers, all to be presented in one session, as follows:

Practical Aspects of Vibration Isolation, by W. C. Keys (U. S. Rubber Co.); *Uses of Plastics in Various Ways in Airplane Construction,* by H. N. Haut (Bellanca Aircraft Corp.); *Plastics,* by G. E. Landt (Continental-Diamond Fibre Co.); *Advances in Rubber and Plastics During 1941.* The latter paper is the committee report and will be compiled by Dr. Yerzley and Dr. Gordon M. Kline of the National Bureau of Standards. The latter is secretary of the sub-division.

In connection with the committee report, the chairman urges that all members of the sub-division call various items of progress of rubber and plastics in the field of mechanical engineering to the attention of himself or Dr. Kline. Data both with respect to new technical developments and with respect to increasing volume of rubber and plastics in engineering, and particularly mechanical engineering design, should be included. Interesting photographs of such developments are also desired.

Correspondence addressed to Dr. Yerzley should be sent to P. O. Box 525, Wilmington, Delaware, and to Dr. Kline, at the National Bureau of Standards, Washington, D. C.

Imports of crude rubber into the United States during August totalled 105,456 long tons, an all-time high, according to the Department of Commerce. The value of the August imports was set at $45,083,933, an average value of 19.09 cents per pound.

LOS ANGELES NEWS

Operations have begun on manufacture of self-sealing fuel tanks for airplanes at the Goodrich factory. Preparations for this output have been under way for some time.

M. A. Quirk, personnel director for the U. S. Rubber Company plant here, has returned from a restful vacation spent in the Sierra Madre mountains.

T. Kirk Hill, president of the Kirkhill Rubber Company, spent a portion of September on a prairie chicken and pheasant shooting expedition in northern North Dakota and southern Saskatchewan. Mr. Hill invaded those hunting grounds via airplane and returned to California again in the same manner. The success of the expedition was obvious from the number of birds he brought back with him. Airplane sickness, however, is something this writer was cautioned not to mention and for that reason it is not mentioned herewith.

Frank L. Shew who has been chief chemist for the Darnell Corporation in Long Beach for four years has resigned that position to take one in the chemical department of the Kirkhill Rubber Company, Los Angeles. Mr. Shew is secretary of the Los Angeles Rubber Group.

E. J. Ecki, manager of merchandise distribution for the Goodyear Tire and Rubber Company, is receiving sympathies of his fellow workers because of the death of his wife. Mrs. Ecki passed away Sunday, October 4.

G. H. Reynolds, superintendent of Division B in the Goodyear Australian plant, stopped in Los Angeles a few days while enroute to Akron from Sydney. R. H. Meiser, head of the personnel department in the Australian plant, also stopped a few days in Los Angeles while en route from Akron to Sydney. Mr. Meiser has replaced R. Miller in the plant in Sydney.

The Kirkhill Rubber Company is adding a 9,000 square foot addition to the plant on St. Andrews Place, an extrusion plant. A new tuber and a number of new presses have been added in the last month.

A bulk carbon black handling unit now being installed at the U. S. Rubber Company plant will be ready before the first of the year, according to present plans.

Carl E. Stentz, president of the Latex Seamless Products Company, is considering the erection of an addition to the factory at 4620 East Washington Boulevard, an addition made necessary by the growing volume of business.

Floyd Stebbins, who had been in the employ of the United States Rubber Company since September 3, 1924, and who recently had been factory superintendent in the Los Angeles plant, died Thursday, September 25, after a brief illness. Mr. Stebbins was 51 years old. He leaves his widow and two children.

T. G. Graham, vice-president, and A. W. Phillips, general superintendent of the tire division for the B. F. Goodrich Company at Akron, spent some time during the month of September in Los Angeles.

Ben Fenner, chief chemist and plant superintendent for the Griffith Rubber Mills, Portland, Oregon, spent several days in the Los Angeles area in September visiting various rubber plants.

L. C. Weimer, factory manager for the W. J. Voit Rubber Corporation, made a business trip to eastern cities during the month of September.

William Kearnes, formerly factory manager of the U. S. Rubber Company plant in Detroit, is wintering in California. Mr. Kearnes is retired.

The new warehouse at the Goodrich plant is nearing completion at this writing. It has been under construction for several months.

Kenneth Courtois is the new factory superintendent at the U. S. Rubber Company plant succeeding Floyd Stebbins who died recently. Mr. Courtois was formerly foreman in the tire building room.

The Plastics and Rubber Products Company is the name of a new company formed to manufacture rubber and plastics parts for the airplane industry. The location is 2100 Hyde Park Boulevard, Los Angeles. V. S. Anderson and N. O. Hulsey are the proprietors. Production has started on rubber parts but as yet not on plastics.

Henry Gabriels, Jr., part owner of the Sierra Rubber Company, died Friday, October 3. Services were held Monday, October 6. Mr. Gabriels was well known in the rubber industry in southern California.

For the first time since the organization was founded in 1904, the National Association of Engine & Boat Manufacturers has been forced to cancel its annual motor boat show. The show was scheduled for January in New York City.

LOS ANGELES GROUP MEETING SPONSORED BY GOODYEAR TIRE

The first monthly supper meeting of the new season of the Los Angeles Group, Rubber Division, A.C.S., was held in the Rainbow Room of the Mayfair Hotel in Los Angeles on October 7. Approximately 120 members and guests attended. Lee Horchitz (Goodrich), chairman of the group, presided.

The program was sponsored by the Goodyear Tire and Rubber Company. The main addresses were given by Prince Andrei Lobanov-Rostovsky, professor of history at the University of California in Los Angeles, and J. Douglas Wilson, superintendent of national defense classes in the Los Angeles public schools. The former took as his subject "History in the Making" and the latter outlined in detail the defense instruction program in the schools. Both speakers were well received.

Table favors as well as the door and special prizes were supplied by Goodyear. Russell Olds of the Olds Alloy Company won the special prize, a portable radio; H. S. Oak of the United Color and Pigment Company, Fred Wagner of the U. S. Rubber Company, and Bill Haney of the Kirkhill Rubber Company each won an Airfoam office chair cushion, given as door prizes. Six new members were voted in and a large number of visitors were introduced.

Factory Manager Mayo (of Goodyear), who did plenty of work in getting this program together, was presented with a book and a bowl of gold fish, the latter in recognition of a pet hobby of Mr. Mayo. A glint of humor was introduced into the meeting by having the lights go out shortly after Mr. Mayo started to talk in introducing the program. Loud complaints were made about the bad service at the hotel—all in fun—and when the lights came on again the book and the fish were on the table in front of Mr. Mayo. He confessed he was dumfounded for a moment and did not know what was happening.

Eight meetings are held by this group each year, on the first Tuesday of the month, July, August, September and January being excepted. During the coming year different rubber companies will contribute programs, the thought being to make each program educational as well as entertaining. The membership of the group has grown rapidly from year to year.

Making Synthetic Rubber Equipment

The Chemical and Process Engineering Department of the Blaw-Knox Co., Pittsburgh, has received contracts from both the Naugatuck Chemical Division of U. S. Rubber and the Firestone Tire & Rubber Co. for equipment necessary to the construction of the synthetic rubber plants both of those companies will build and operate for the government. A total of approximately $3,000,000 is involved in the two orders.

OBITUARIES

Lee R. Miller

Lee R. Miller, brother of Harvey L. Miller, one of the founders of the Miller Rubber Company, and a distinguished developer of rubber products in his own right, died at City Hospital in Akron on September 27 at the age of 65.

Born in Smithville, Ohio, Mr. Miller came to Akron at the age of 20 when his brother was helping to organize the Miller Rubber Co., which in 1930 became part of the Goodrich organization. Joining the new company, Mr. Miller was one of the developers of the present-day rubber glove and was manager of the Miller glove department for many years, continuing in that capacity when Goodrich took the company under its wing. For the past seven years he had acted as treasurer of the Goodrich Twenty Year Club.

Known throughout the United States as a vigorous leader in the Moose organization, Mr. Miller was honored in 1937 by election to the office of supreme trustee of the national order. He was active in welding the Moose lodges into a state organization in 1929 and was the state organization's first vice-president.

Funeral services for Mr. Miller were held in Akron on September 30, with interment in Rose Hill Cemetery. A widow and daughter survive.

Samuel Norris

Samuel Norris, former general counsel and secretary of the U. S. Rubber Co., died at his home in Ridgefield, Conn., at the age of 79 following an illness of several weeks, on September 25.

Born in Bristol, R. I., the member of a distinguished family, Mr. Norris matriculated at the University of London, in London, England, and then returned to the United States to enter Harvard University from which he was graduated in 1883. He later was graduated from Harvard Law School and practiced law in Bristol and Providence.

In 1897 Mr. Norris joined U. S. Rubber as general counsel and later took on the additional duties of secretary. He served with the company for 32 years, retiring in 1929. During this period, he lived in New York City.

Albert H. Hastorf

Albert H. "Al" Hastorf, associated with the sales department of the Binney & Smith Company of New York City for the past five years, died suddenly at his home in Westfield, N. J., at the age of 49, on September 28. In conjunction with John M. Hamilton, Mr. Hastorf had been covering the country in the interests of carbon black sales for Binney & Smith.

Mr. Hastorf was a product of New York City, having been born, raised and educated in that city. During the World War he served as a Captain. Prior to joining Binney & Smith he was associated with one of the larger shipping companies. Funeral services were held at Westfield on September 30.

Army Employs Tire Expert

Conservation of rubber took on a new emphasis in the Fourth Corps Area last month with the employment by the U. S. Army of a tire expert whose duty it will be to inspect all unserviceable tires at ten quartermaster motor maintenance districts in the eight southeastern states to determine whether they can be economically repaired and returned to service. All tires which are deemed unsuitable for repair will be salvaged and the rubber returned to the manufacturers for reclaiming purposes. R. J. Jackson, a civilian, is the tire expert employed.

New Coating Firm Organized

Protective Coatings, Inc., 10391 Northlawn, Detroit, Michigan, has been organized by H. Tom Collord. The new firm will feature a complete range of products for the protection and preservation of materials used in manufacturing. These products will be known as the Tocol line and their service includes complete rubber insulation for the protection of many types of materials against the ravages of the elements. Mr. Collord is also the founder of Collord, Inc., and the Paramount Rubber Service, Inc.

Experiment with Guayule

Under the sponsorship of the Botany Department of the California Institute of Technology, W.P.A. workers in the California area are growing approximately 500 guayule shrubs. The seedlings were secured from the nursery maintained at Salinas by the Intercontinental Rubber Co. Progress of the shrubs will be checked and reported on from time to time by the Institute.

American Firstoline Moves

The sales and export offices of the American Firstoline Corp., manufacturers, distributors and exporters of a complete line of chemicals, including French Process zinc oxides, have been moved from Long Island City to 420 Lexington Avenue, New York City. Laboratory and storage facilities will be continued at the Long Island City plant.

Threaten Ceiling on Scrap

No justification exists for further increases in scrap rubber prices, according to a statement made by Leon Henderson, Price Administrator, on October 5. Mr. Henderson's statement followed a conference with a representative group of scrap rubber dealers. He intimated that if advantage is taken of the defense situation to advance prices beyond present levels immediate action in the form of a price ceiling will be taken by the Office of Price Administration. Included among 18 men appointed on September 11 to the Waste Materials Defense Industry Advisory Committee of the Bureau of Clearance of Defense Industry Advisory Committees were the following leaders in the scrap rubber field: Edward B. Friedlander (Lowenthal Co.), Herman Muehlstein (H. Muehlstein & Co.), and Erwin M. Desser (Desser Tire & Rubber Co.).

Rubber Union Holds Meeting

Approximately 210 delegates, representing more than 84,000 rubber workers, attended the Sixth Annual Convention of the United Rubber Workers of America, held in Indianapolis the week of September 15. Vigorous opposition was set up against any radical changes at this time, the majority of the delegates being satisfied apparently to let things remain as they are at present. The suggestion that the union start negotiations with the Rubber Manufacturers Association for a blanket-wide contract covering the entire industry was defeated on the grounds that it would be impractical at this time because of mechanical conditions in various plants and because the association did not have the power to deal with the union.

Discusses Cleaning of Molds

An effective yet simple method of cleaning molds used in the production of rubber and synthetic rubber products is told in a three-page article appearing in the September-October, 1941, issue of the *Oakite News Service*, house organ of the Oakite Products, Inc., 57 Thames St., New York City. Copies of the issue are available without cost on request.

L. H. Gilmer Co.

First Half: Net income of $154,083, equal to $1.86 a share on 82,824 shares, which compares with $53,595, or only 65 cents a share, last year. Net sales were $1,196,251 and $713,655, respectively.

Faultless Rubber Co.

Year Ended June 30: Net income of $128,411, or $1.96 each on 65,450 common shares, which compares with $137,621, or $2.10 a share, in the previous year.

Kelley Leaves Rubber Industry

Robert C. Kelley, purchasing agent of the Converse Rubber Co., Malden, Mass., and the Hodgman Rubber Co., Framingham, Mass., and associated with the rubber industry for the past 23 years, has left that industry to become director of purchases for Basic Magnesium, Inc., Las Vegas, Nevada, the company which will operate the new electrolytic magnesium plant now under construction between Las Vegas and Boulder City.

Mr. Kelley was born in Boston and was educated at Harvard, from which he was graduated in 1917. He served as a second lieutenant of infantry in the U.S. Army in 1917-18 and was in charge of quartermaster and ordnance stores at Camp Meade, Maryland. On December 30, 1918, he entered the employ of the Converse Rubber Shoe Co. in waste control and salvage work, leaving to join the Hood Rubber Co. in July, 1925. He returned to Converse as purchasing agent on April 1, 1926. In 1930 he assumed the additional duties as purchasing agent for Hodgman Rubber.

Always actively engaged in purchasing work, Mr. Kelley served as president of the New England Purchasing Agents Association in 1935-36 and as a director of the National Association of Purchasing Agents in 1936-37. Since 1930 he has been chairman of the textile committee of the latter association. He has also been Instructor in Purchasing at the Boston University School of Business Administration from 1930 to date, as well as a visiting lecturer on purchasing at M.I.T. Mr. Kelley's other connections include membership on the Arbitration Board of the Rubber Manufacturers Association and the Worth Street Rules (textiles).

Mr. Kelley is also a member of Mt. Vernon Lodge, A.F. & A.M. Malden, Mass.; member and past high priest Royal Arch Chapter; member of Gethsemane Commandery Knights Templar; and a member of the Brae Burn Country Club, Harvard Club of Boston and Harvard Club of New York. Prior to his departure for Las Vegas, Mr. Kelley was tendered farewell dinners by the New England Purchasing Agents Association and by the combined staffs of the Converse and Hodgman Rubber companies. He leaves the rubber industry with the best wishes of that industry.

Rubber Used for Payment

In return for lease-lend aid to Britain, the United States is receiving supplies of rubber, tin and several other valued materials, with shipments of such materials being made as fast as possible, according to usually well-informed Congressional circles. The barter is said to relieve the Government of the necessity of buying these materials through the Reconstruction Finance Corporation with tax dollars. No official confirmation of the report has however been secured.

Messrs. Ghez in United States

Henry and Oscar Ghez, brothers, formerly operators of the S. A. Industrie du Caoutchouc Souple, Pont-de-Cheruy, France, which produces a wide variety of rubber articles, have arrived in the United States. The Ghez family also formerly owned the Sigma factories in Italy. These factories were sold to Pirelli just prior to the outbreak of European hostilities. The Sigma plants were the largest producers of reclaimed rubber, furnishing Italy with most of her reclaim. According to Oscar Ghez, he and his brother intend to apply themselves in this country to research work, including the further development of several new rubber reclaiming processes. For the present, the brothers may be reached in care of the Rubber & Plastics Products Co., 261 Broadway, or the Hotel Oliver Cromwell, both in New York City.

Discuss Tractor Tire Progress

Recent developments in rubber tires and rubber tracks for heavy duty industrial equipment were discussed at a special session held during the National Tractor Meeting of the Society of Automotive Engineers in Milwaukee, Wisconsin, on September 25 and 26. Three papers were given, the titles and authors of which were: *What the Designer Should Know About Tires for Earth Moving Equipment,* Walter Lee (Goodyear); *What the User Should Know About Tires for Earth Moving Equipment,* L. W. Fox (Firestone); *The "Square Wheeled" Tractor Goes to Town,* R. Mayme and H. W. Delzell (Goodrich).

French Institute Operating

Despite considerable difficulties, the laboratories of the Institut Francais du Caoutchouc (French Rubber Institute) are continuing to function, according to a letter received by C. C. Davis of the Boston Woven Hose & Rubber Co. from Jean LeBras, director of the Institute's research division. Mr. LeBras visited this country several years ago. According to the letter, the Institute has been responsible for publication of the *Revue Generale du Caoutchouc* since January, 1941, and is publishing that journal regularly. The French Rubber Institute is temporarily located at 17 Rue Roovere, Vichy (Allier), France.

Maximum price ceilings were placed last month on ethyl alcohol, based on a top price of 24½ cents a gallon "at works" for the basic formula known as "specially denatured 2B." Differentials were also established for other formulae.

An Index to Vol. 49 of THE RUBBER AGE will be found facing Page 76 of this issue.

Calco Strike Called Off

A strike at the plant of the Calco Chemical Division of the American Cyanamid Company at Bound Brook, N. J., which seriously threatened to halt production in certain rubber factories depending on the plant for their accelerators, antioxidants and other compounding ingredients, was ended on October 11 in response to pleas from Washington. The strike started on September 29. A truce agreement, signed by the management and representatives of Local 22051 of the Chemical Workers Union, an A. F. of L. affiliate, cleared the way for resumption of operations. The agreement provided that American Cyanamid would recognize the union as sole bargaining agent, that there would be no discrimination against strikers, and that both company and union would accept Prof. William L. Nunn, chairman of the New Jersey Board of Mediation, or his representative, as an impartial observer to see that the agreement is carried out.

Tire Increase Permitted

Under date of October 11, tire manufacturers were notified by Leon Henderson, Price Administrator, that no objection would be made by the government to advances in consumer list prices on tires and tubes, providing such advances did not exceed 9% over levels prevailing on June 16, 1941. He specified, however, that each new schedule must be submitted to the O.P.A. for approval and that the increases may not become effective before October 20. The advance is being allowed due to higher costs for rubber, cotton, other materials and labor.

Approve Goodyear Pact

The formal contract recognizing Goodyear Local No. 2 of the United Rubber Workers of America as sole bargaining agent for approximately 14,000 workers at Goodyear's Akron factories, was approved by the union early this month. Actual signing of the contract, however, still awaits adjustment of charges brought against the company two years ago by the National Labor Relations Board, hearings on which are still being conducted. The union is expected to ask the board to quash the original and amended complaint.

Announce Distribution Terms

The long awaited details from the Rubber Reserve Company as to its method of distribution of government-owned rubber and rates which may be charged by dealers for handling such rubber, were finally made public last month. D. D. Haldane, well-known in rubber brokerage circles, was named as distributing agent for the Rubber Reserve Co. Full details regarding dealer's charges and the distribution method will be found elsewhere in this issue.

You've saved

two million lives

...so far!

SINCE 1907, when the fight began, the tuberculosis death rate has been reduced 75%!—by people like you buying Christmas Seals. More than two million lives have been saved.

But the battle against this scourge must go on. *Tuberculosis still kills more people between the ages of 15 and 45 than any other disease.*

Yet it is possible to eliminate completely this enemy of mankind. Our weapons are Research, Education, Prevention, Control —made possible by your use of Christmas Seals. Get them today.

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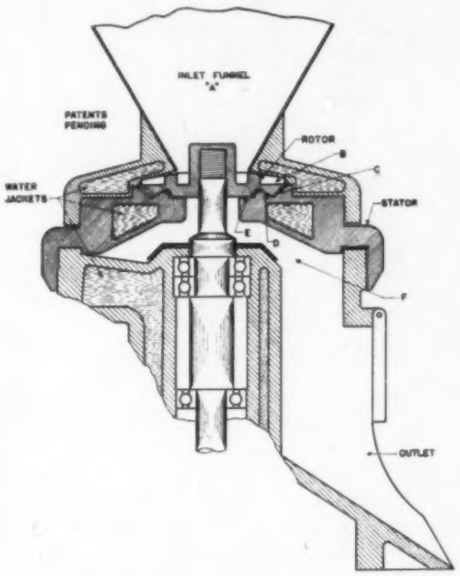
The National, State and Local
Tuberculosis Associations
in the United States

NEW EQUIPMENT

"Paste Type" Colloid Mill

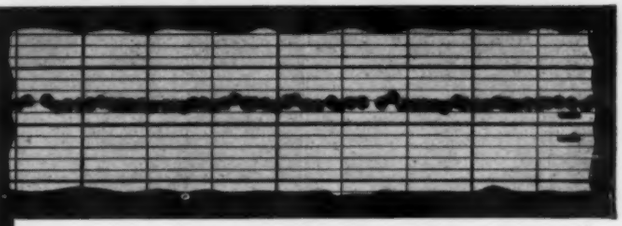
A new "paste type" colloid mill, said to minimize aeration and foaming and to produce excellent disintegrations and dispersions of such materials as rubber compounds, textile finishes, paper and leather coatings, and a variety of other semi-solids, has been introduced by the C. O. Bartlett & Snow Co., Cleveland, Ohio. The new mill is said to adapt to the producing of



heavy colloidal dispersions the proved triple processing action already found satisfactory for materials in the lighter range.

Referring to the accompanying diagram, material enters through the large and direct inlet "A" and encounters immediately the vanes on the top of the rotor "B" which premix the material and carry it to the periphery of the rotor at high pressures, forcing it downward and then upward between the machined surfaces of the rotor and stator, "C" and "D" on the diagram, the first and second processing actions,—then crowding it into constantly smaller areas as it approaches the center, and forcing it across the flat area "E" between the rotor and stator, the third processing action,—to be discharged through the steep sloped outlet designed to assure the ready discharge of the material from the machine to a container.

The gap between the rotor and stator is adjustable to and calibrated in 1/1000 of an inch. Adjustment can be made either before or while the machine is in operation and the stator locked in position with the desired gap. The rotor and stator can be furnished in whatever material is best suited to the material being processed. The mill meets every requirement for sanitation and cleanliness. There are no hidden recesses or inaccessible places in the mill and no packing is used. The inlet housing, rotor and stator, can be disassembled in less than three minutes for cleaning, sterilization and inspection.



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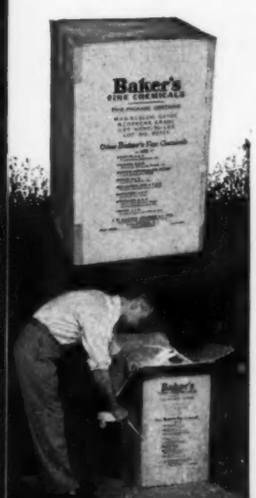
UNIFORM
CALCINED MAGNESIA!
for Your NEOPRENE COMPOUNDING!

*Temperature chart above shows unvarying temperature (never more than 5° variation) in the special, custom-built electric ovens that manufacture Baker's Light Calcined Magnesia. This is major reason for:

1. *Uniformly* GOOD WETTING POWER AND EASE OF INCORPORATION.
2. *Uniform* DISPERSION with IMPROVED STABILIZING EFFECT.
3. *Uniform* QUALITY—that is maintained in MOISTURE PROOF PACKAGING.



Strong, 4 ply bags, asphalt-interlined and tape-sealed—packed in corrugated waterproof cartons—guard against moisture infiltration.

Neoprene Compounders who want *uniformity* in every batch of Calcined Magnesia—can look to Baker and *rely* on Baker!

Baker has learned the art of exactness, in many years of producing purity products to definite physical and chemical specifications. Baker manufactures to small tolerances to meet the requirements of any industry.

Investigate Baker's Light Calcined Magnesia—manufactured especially for the exacting needs of Neoprene Compounders. Test it—in wetting power, in ease of dispersion! Learn how uniform it is—and how this uniformity is maintained by special, moisture-proof packaging.

Send for free samples.

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Baker's *Light*
CALCINED MAGNESIA
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CAPITOL PROCESS LINER TREATMENT

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The Capitol Process of Liner Treatment is an economical and efficient method of rendering cotton piece goods repellent to adhesion of rubber stocks. It fills a distinct need for a low cost treatment of fabrics to give them non-sticking properties and long life.

Should your stocks require no specially treated liners to prevent adhesion, our processing of the fabrics you now use will lengthen the duration of their usefulness many times over and create an important reduction in your annual purchases of cotton piece goods for this purpose.

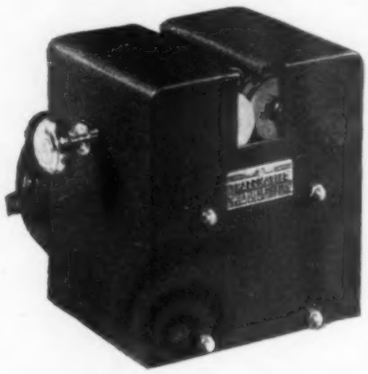
Try the CAPITOL PROCESS on your next order of Rubber Repellent Liners.

•

TEXTILE PROOFERS, Inc.
ONE GATES AVENUE
JERSEY CITY, N. J.

Heavy Duty Electric Knife Sharpener

Based on a demand from users of its small electric knife sharpener, the E. E. Krumeich Co., Box 2616, Firestone Park Station, Akron, Ohio, has developed and introduced the Heavy Duty Sharpmaster Electric Knife Sharpener. The new machine, which sharpens



both sides of the blade simultaneously, will handle any size knife regardless of length or width of blade. It is also designed to handle cleavers, hatchets or other heavy instruments, as well as hooked knives such as those used in rubber factories, linoleum cutters, etc. The sharpening wheels of the heavy duty machine are adjustable laterally so that by turning a control knob at the left the operator may accomplish any edge-taper from a quick, short "v" on through a longer "V" to a full "grind-back." This adjustment also serves to compensate for wear of sharpening wheels so that they may be worked down to a small diameter. Since the Sharpmaster works on the cutting edge only, the sides of knives cannot be defaced. The new heavy duty type is 5½ inches wide, 9 inches deep and 7 inches high. It weighs approximately 17½ pounds.

Burgess Vibro-Tool

The Vibro-Tool, a new versatile tool operating on the vibrating principle, which can be used for engraving, cutting, hammering or carving on sheet rubber, metal, wood, linoleum, sheet cork, ceramics and most other materials, has been announced by the Burgess Handicraft Supplies, Chicago. The tool makes 7200 strokes per minute, with strokes adjustable up to ⅛-inch. A specially designed chuck easily grips a large variety of engraving needles, cutting knives, gauges and hammers.

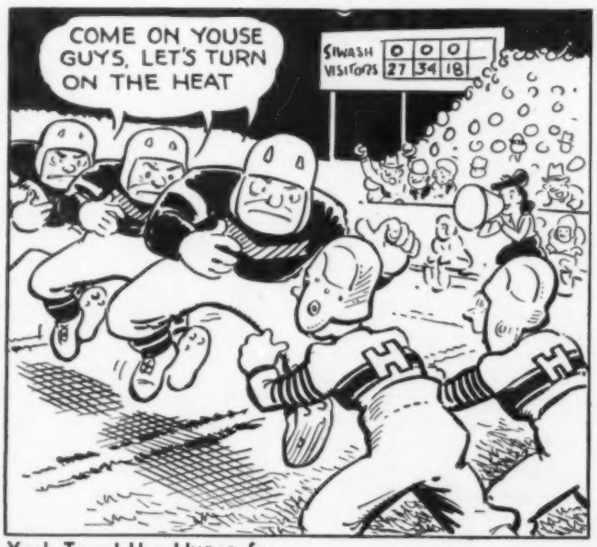
Designed for continuous operation, the Vibro-Tool remains cool when in use. A comfortable ball grip permits ease in handling and accurate control by the operator. It can be used with jigs or fixtures, to cut or engrave a template. Accessories available include fine and coarse needles for engraving, tungsten-tipped needles for cutting or engraving glass and ceramic materials, knife blades, hammer tips, special cutters and a foot gauge for controlling depth of cut. For cutting sheet rubber, the tool is fitted with a knife attachment and gives rapid, clean cuts. According to the manufacturer, the high speed of vibration eliminates the usual difficulties found in cutting sheet rubber.

Automatic Temperature Indicator

Where a large number of thermocouple temperature readings are to be taken, a new automatic temperature indicator just introduced by the Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Penna., is said to do the job in minimum time and to require minimum skill on the part of the operator. Termed the Micromax Model S Indicator, the new instrument is

essentially a Micromax strip-chart indicating recorder, minus the recording mechanism. Like all Model S instruments it indicates on a clearly graduated scale, 9⅞ inches wide, and is available in a wide choice of standard ranges. As many as 50 couples can be used with one instrument. All are individually connected to toggle-switches on the indicator front. To read a couple's temperature, the operator simply throws its switch and a pointer moves automatically to the correct scale position.

ADVERTISEMENT



Yeah Team! Use HYCAR for greater resistance to heat.

See Page 61

BAIRD

PARDON OUR PRIDE!

• On October 1st we received RUBBER PURCHASE PERMIT NO. 1 from one of our factory friends for servicing. So please pardon our pride! *That Permit was the very first issued by the Rubber Reserve Company* of Washington. But we will *always* be proud—proud of our many friends, old and new, who have the confidence in us which has grown from our long years of pleasant and dependable business dealings.

Whether we handle Purchase Permit No. 1 or 1001, our friends will find the same reliable BAIRD SERVICE that factories have always found since we started business in 1903.

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ORGANIC RUBBER COLOR GRANULES

• *Easy to weigh* • *Easy to disperse*
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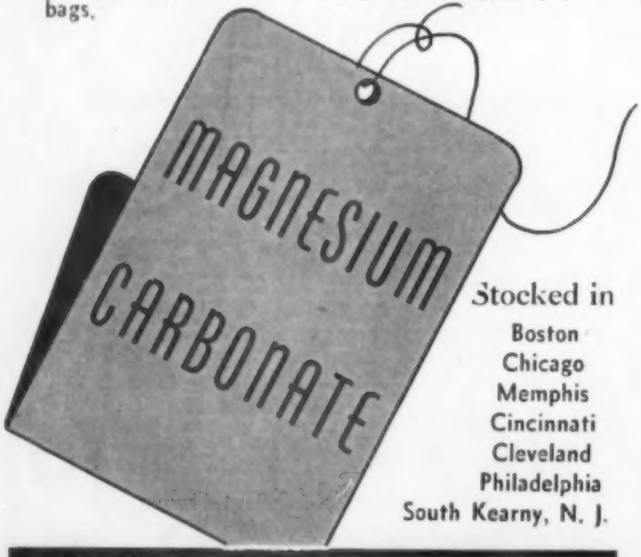
Ample stocks, conveniently located. Quick deliveries in any quantity. Put up in 5-ply moisture-proof paper bags.



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REVIEWS

BOOKS

Annual Report on the Progress of Rubber Technology: 1940. Edited by T. J. Drakeley. Published by the Institution of the Rubber Industry, 12 Whitehall, London, S.W. 1, England. 7¼ x 9¾ in. 160 pp. Price to Members: 2/6 (approximately 60c); Price to Non-Members: 10/6 (approximately $2.50). Customs duty extra on American copies.

(Available in U. S. from *Book Dept.*, THE RUBBER AGE)

It is a tribute to the entire British rubber industry in general and the Institution of the Rubber Industry in particular, that this latest report on the progress of rubber technology, the fourth to be issued, has not only made its appearance but made it close to the expected publication date. As indicated by its title, it reviews technological progress reported in the year of 1940. Like previous issues, reviews in specific fields have been placed in the hands of competent experts in those fields. Complete bibliographical references are given at the end of each chapter. There are 24 chapters in all, plus author and subject indexes. The titles of the chapters and the authors of each follow:

Historical and Statistical Review, T. R. Dawson; *Planting and Production of Raw Rubber and Latex, Gutta-Percha, Balata, Chicle and Jelutong*, T. R. Dawson; *Properties, Applications and Utilization of Latex, Including Treatment of Fabric with Latex*, C. F. Flint; *Chemistry and Physics of Raw Rubber and Rubber Derivatives, Gutta-Percha, Chicle, Balata and Jelutong*, W. J. S. Naunton; *Synthetic Rubber*, Maldwyn Jones; *Testing Equipment and Specifications Other Than for Latex*, W. J. S. Naunton; *Compounding Ingredients, Accelerators, Antioxidants and Softeners*, F. H. Cotton; *Fibres and Textiles*, W. Knight; *Chemical and Physical Properties of Vulcanized Rubber*, A. E. T. Neale; *Tires*, J. G. Mackay; *Belting*, G. F. Payne.

Hose and Tubing, J. Kirkwood; *Cables and Electrical Insulation*, H. A. Daynes; *Footwear*, R. C. Davies; *Games, Sports Accessories and Toys*, J. P. Griffiths; *Mechanical Rubber Goods*, Herbert Rogers; *Roads*, G. E. Coombs; *Flooring*, J. Kirkwood; *Surgical Goods*, C. R. Pinnell; *Textile-Rubber Composites, Solvents, Rubber Composites*, W. N. Lister; *Sponge Rubber*, J. D. Campbell; *Hard Rubber*, B. L. Davies; *Works Processes, Materials, Including the Treatment of Raw Rubber in the Factory, and the Treatment of Vulcanized Rubber*, F. H. Cotton; *Machinery and Appliances*, E. Morris.

•

The Chemical Formulary. (1941 Edition). Edited by H. Bennett. Published by Chemical Publishing Co., Inc., 234 King St., Brooklyn, N. Y. 5½ x 8½ in. 676 pp. $6.00.

Because sufficient new formulae were on hand since publication of the last edition, this newest edition, the fifth one, of the *Chemical Formulary* has been published earlier than anticipated. It broadens and brings up-to-date the contents of the first four volumes and, like the others, contains thousands of latest tested formulae from various industries, including rubber. It should be noted that all the formulae in Volumes 1 to 5, inclusive, are different, and if a certain formula does not appear in any one volume it may possibly be included in another.

Since some mature users of this formulary have not had previous training or experience in the art of chemical compounding, a simple introductory chapter of directions and advice has been included. The directory of sources of chemicals and supplies has been considerably enlarged. The book is divided into 21 chapters and contains in addition a number of tables, a chemical trade-name section, the directory of sources of supply, and a subject index.

American Industry in the War. By Bernard M. Baruch. With an introduction by Hugh S. Johnson. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York City. 6 x 9 in. 498 pp. $5.00.

(Available from *Book Dept.*, THE RUBBER AGE)

This book is really two books in one. It contains a reprint of the report of the War Industries Board of World War I, of which Mr. Baruch was chairman, made in March, 1921, and Mr. Baruch's own program for total mobilization of the nation as presented to the War Policies Commission in 1931. In addition, there is a section devoted to current material on priorities and price-fixing. As pointed out in Mr. Johnson's introduction, many of the policies proffered by Mr. Baruch years ago are being adopted today, almost without modification.

The book should prove of interest to the rubber trade not only for its generalities with respect to American industry in war time but because of the specific reference to rubber and rubber goods in the Commodity Section of the report of the War Industries Board. Summing up the status of the domestic rubber manufacturing industry in 1917, it reviews all of the measures used by the government at that time to curtail production of rubber goods in other than "essential" products. Although today's rules and regulations on rubber curtailment are more rigid than those followed in 1917-18, the pattern is familiar.

•

Rubber's Goodyear: The Story of a Man's Perseverance. By Adolph C. Regli. Published by Julian Messner, Inc., 8 West 40th St., New York City. 6 x 9¼ in. 248 pp. $2.50.

Closely following both Barker's *Charles Goodyear: Connecticut Yankee and Rubber Pioneer* and Wolf's *India Rubber Man* insofar as historical data and legend is concerned, this latest biography of the discoverer of vulcanization differs greatly in its manner of presentation. Whereas the two recent biographers interpolated their stories with specific biographical references and told straight running tales, this latest biographer uses his imagination freely and tells his story largely through the use of imagined dialogue. His facts, however, are accurate and properly sequenced. The dialogical treatment makes for easy reading, particularly for juveniles. The book has 23 chapters and a bibliography of books, court decisions and magazine articles. Curiously, neither Barker's nor Wolf's books are mentioned.

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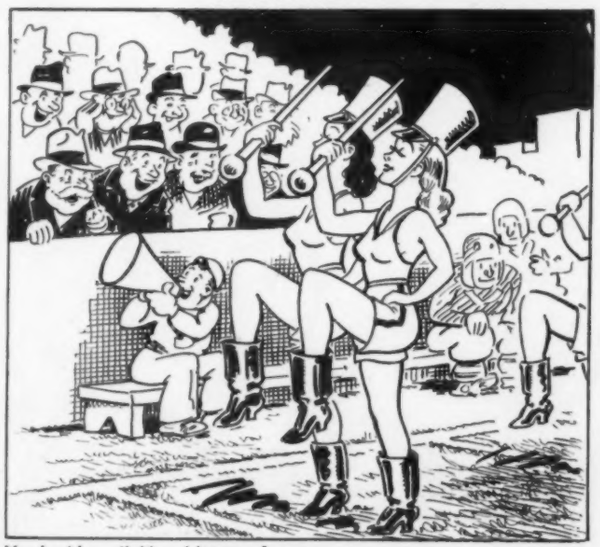

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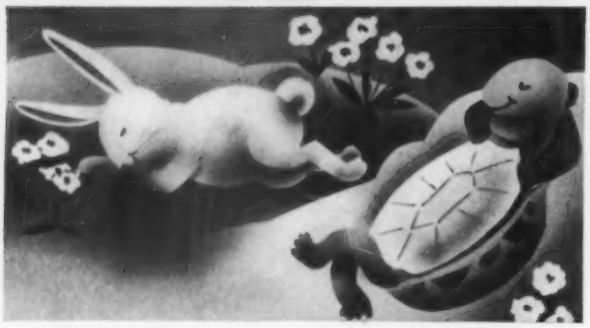

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REVIEWS (CONT'D)

High Polymeric Reactions: Their Theory and Practice. By H. Mark and R. Raff, Published by Interscience Publishers, Inc., 215 Fourth Ave., New York City. 6 x 9 in. 476 pp. $6.50.

This is the third volume in the series of books on high polymers being published by Interscience Publishers, the first two being *Collected Papers of W. H. Carothers on High Polymeric Substances* and *Physical Chemistry of High Polymeric Systems,* respectively. The latest volume describes the present state of our knowledge concerning the mechanism of chemical processes during which high polymers are formed.

As indicated by the authors in their preface, there are several excellent monographs which deal with the subject of high polymers, such as *Polymerization, The Chemistry of Synthetic Resins,* and the first volume in the present series. In a certain degree of contrast to these books, the present one is devoted to the *quantitative* characterization of the situation with the special aim of showing how far physico-chemical measurements allow a quantitative description of the mechanism of polyreactions at the present time.

Following this aim, the authors divided their volume into two parts—General and Special—in order not to interrupt the mathematical derivation of certain principles. The general part presents all important general relationships in a quantitative manner, while the special part collects the literature on the subject, arranged according to the classification usual in organic chemistry.

As was the case with the previous volumes in this series, specific references are made to rubber and synthetic rubber and to the dry distillation of both. Reference to chlorinated rubber and to various rubber derivatives is also made. The book has complete author and subject indexes.

●

Business as Usual. By I. F. Stone. Published by Modern Age Books, Inc., 432 Fourth Ave., New York City. 5½ x 8½ in. 275 pp. $2.00.

This book is a concise review of the first year of defense effort and a critical analysis of that effort. The author, Washington editor of *The Nation,* points out what in his belief are the loopholes, dead spots and points at which there is lack of co-ordination, and then offers suggestions for mending, plugging and co-ordinating these gaps. The book is replete with factual data and the author has apparently dug deeply into the commodity situation.

Mr. Stone takes the government to task with respect to its attitude on the rubber situation. Pointing out that defense demand for rubber will soon swell beyond all expectations, since, for example, a medium-sized tank requires approximately 1,000 pounds of rubber and only 200 of such tanks would take 200,000 pounds of rubber, he states that "lack of foresight is evident in current plans for production of synthetic rubber." His point is that we should not wait until Japan seizes the Dutch East Indies before embarking on a real synthetic rubber program, but should get such a program under way immediately. And not a program calling for a few puny thousands of tons annually, but one with large scale ambitions.

Although the complete interpretation of the author of the rubber situation, or several other situations covered in the book, such as zinc, are open to argument, this book merits reading. It indicates clearly that the most democratic type of defense is at the same time the most efficient defense of democracy.

●

Davison's Textile Blue Book. (1941 Edition). Published by Davison Publishing Co., Ridgewood, N. J. 5 x 7¾ in. 1200 pp. $7.50 (Office Edition); $5.00 (Handy Edition); $4.00 (Salesmen's Directory).

The latest edition of this directory has been revised and brought completely up-to-date. Like previous editions, it gives data on cotton, woolen, rayon, silk and knitting mills, as well as dyers, sanforizers, factors, etc. One section is an index to all mills in the United States and Canada. This directory is of special value to all purchasers and users of textiles of all kinds, including elastic yarn.

Minerals Yearbook: Review of 1940. Edited by H. D. Keiser. Published by U. S. Bureau of Mines, Department of the Interior. Available from Superintendent of Documents, Washington, D. C. 6 x 9 in. 1459 pp. $2.00.

This latest edition of the *Minerals Yearbook*, held to be the official reference work and statistical record of the mineral industries, contains 72 chapters, prepared by specialists in the field of mineral economics and technology. As in previous editions, all known minerals receive consideration. Those classified as strategic or critical in the national defense program, however, receive special consideration, and much information relative to such minerals, heretofore unavailable, is published for the first time.

The volume has been considerably expanded and includes two new chapters. One of these, Review of the Minerals Industries in 1940, presents a summary of the principal developments during the year and also a detailed historical record of the establishment and organization of the various government defense agencies, including the Office of Production Management. The other, Effect of the International Situation on United States Trade in Minerals, discusses the stimulation of import trade, the control of exports essential to the procurement program, alternative sources of strategic minerals, and Latin America as a potential source of supply.

As usual, a full chapter is devoted to carbon black, written by G. R. Hopkins and H. Backus. This chapter reviews production, demand, stocks, prices and values of carbon black during 1940. As a rule, this chapter is made available in reprint form. Also of special interest to the rubber industry, is a brief discussion of synthetic rubber from petroleum.

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Hard Rubber Manual. Jos. Stokes Rubber Co., Trenton, N. J. 3¾ x 8½ in. 32 pp.

The characteristics and manufacturing procedures for hard rubber are outlined in this new manual, believed to be the first of its kind published. What hard rubber is, how it is compounded and molded, the creation of molds, color in the finished piece, factors in design, different forms possible, cost variations and technical terms are among the subjects discussed. Comparisons of physical qualities with those of other modern thermosetting plastics are given. The entire manual is written in clear, concise English and the text is well presented.

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The volume, consisting of over 1,000 pages, fully indexed, contains the 103 papers presented at the Conference in 1938. Subjects include: Applications; Durability; Compounding Materials; Latex; etc. (Copies of this book may be ordered from RUBBER AGE for $12.00.)

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REVIEWS (CONT'D)

Small Business Problems of the Tire and Rubber Manufacturers and Retailers. 5¾ x 9 in. 152 pp. Available without cost from the U. S. Government Printing Office, Washington, D. C.

This report is the result of the survey of the problems of the small tire manufacturer and retailers undertaken late last year by the Senate Special Committee to Study the Problems of American Small Business, of which Senator James E. Murray (Montana) is chairman. The report sets forth a number of major obstacles, listed in order of their relative importance, confronting the small business man in the tire industry. The two principal obstacles, as outlined in the report, are the preferential treatment accorded manufacturer-owned retail stores by tire makers owning and operating those outlets, and the preferential treatment accorded large retail corporations by certain tire manufacturers. Lack of standards by which various grades and makes of tires may be judged is also listed as an obstacle. George J. Burger, consultant to the independent tire trade, collaborated in the survey.

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The Rubber Industry. By Josephine Perry. Published by Longmans, Green & Co., 55 Fifth Ave., New York City. 6 x 8 in. 96 pp. $1.50.

This book, one of the volumes in the "America At Work" Series published by Longmans-Green, primarily for the average school child, outlines the story of rubber, from history to finished article, in brief and simple terms. After recounting the progress in the production of plantation rubber, it gives some factual information on manufacturing methods. Although far from an exhaustive work, the author has pieced her story together with painstaking care, securing most of her information directly from the industry. As an indication of this careful attention to details there is a complete chapter on guayule and synthetic rubber as possible "rubber substitutes." The book has 12 chapters in all and a subject index. It should serve to make the complex rubber industry absorbing to the student.

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Chemical Engineering Catalog (1941 Edition). Published by Reinhold Publishing Corp., 330 West 42nd St., New York City. 8 x 11 in. 1214 pp.

This latest edition of what has earned the title of "The Process Industries' Own Catalog" is the 26th annual one published. It has of course been brought completely up-to-date and contains collected, condensed and standardized data on equipment, machinery, laboratory supplies, heavy and fine chemicals and raw materials used in industries employing chemical processes of manufacture. Like previous editions, it is divided into four sections: (1) Trade Name Index; (2) Equipment and Supplies; (3) Chemicals and Raw Materials; (4) Technical and Scientific Books. In addition to the text, the advertisements of the equipment manufacturers and chemical suppliers offer considerable information in their own right.

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Natural and Synthetic Rubbers. By Harry L. Fisher. Published by the American Society for Testing Materials, 260 So. Broad St., Philadelphia, Penna. 6 x 9 in. 32 pp. 50c per copy.

This is the 1941 Edgar Marburg Lecture which Dr. Fisher presented before the 44th Annual Meeting of the A.S.T.M. As indicated by the title, the chemical and physical properties of rubber are outlined, sufficient to enable the reader to understand how rubber can be used in such a wide variety of application. Synthetic rubbers are then discussed in some detail, their properties compared with those of natural rubber, and some of their uses described. The booklet represents one of the most complete comparisons between the properties of natural and synthetic rubber yet available.

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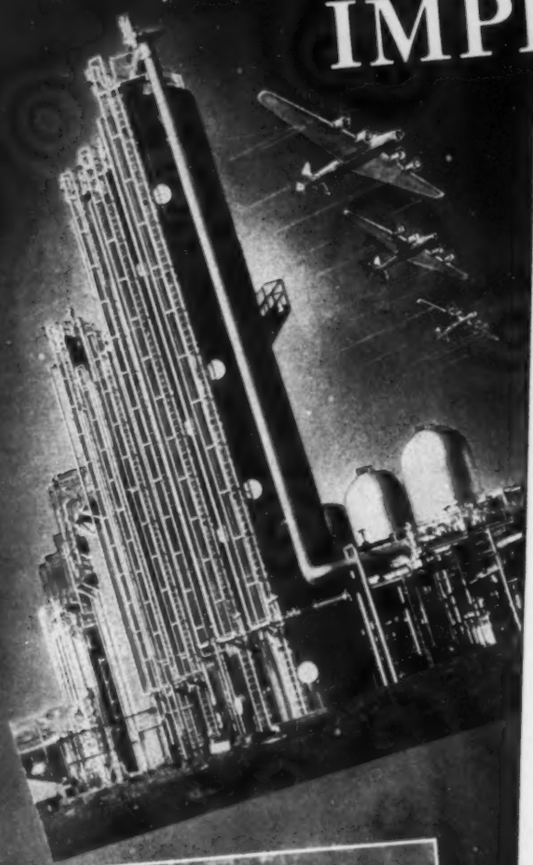

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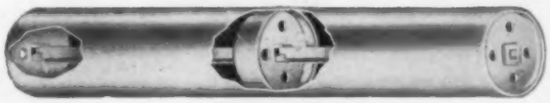

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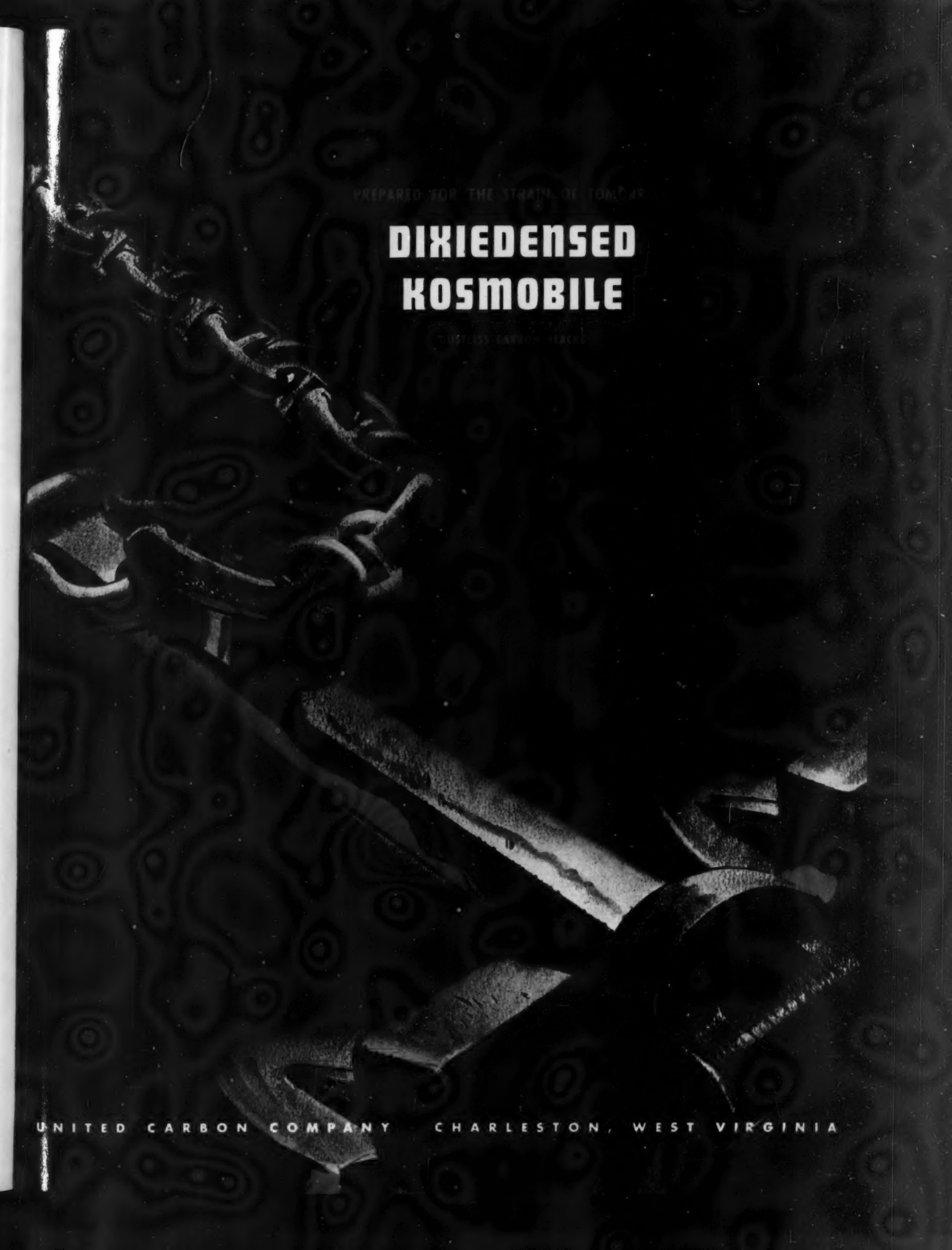
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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, OCTOBER 11, 1941

Crude Rubber

WITH the passing weeks the amount of free rubber offered on the Commodity Exchange grows smaller and smaller and a point has already been reached at which scarcely any spot rubber is quoted. With the approval of Leon Henderson, in his capacity as head of the Office of Price Administration, trading in rubber futures on the Exchange was resumed on September 15th. It had been suspended at Mr. Henderson's request on August 13. Resumption of trading was permitted for the sole purpose of liquidating outstanding contracts, but such liquidation must be made under a maximum price of 22½ cents per pound, which is the price set by the Rubber Reserve Co., now the sole importer of rubber into the United States, for resale to the rubber manufacturing industry on No. 1X ribbed smoked sheets. Under these conditions trading is almost lackadaisical and prices are confined within narrow limits, ranging from 22.00 to 22.40 cents per pound. Only futures up to March delivery are permissible. Trading, accordingly, will soon cease on the Exchange. Quotations in the outside market follow:

As of October 10

Plantations—

Ribbed Smoked Sheets—

No. 1 Spot	—	@	.23¼
No. 2	—	@	.23
No. 3	—	@	.22¾
No. 4	—	@	.22¼
Thin Latex Crepe	—	@	.24¾
Thick Latex Crepe	—	@	.24¾
Brown Crepe, No. 1	—	@	.21¾
Brown Crepe, No. 2	—	@	.21½
Amber Crepe, No. 2	—	@	.21¾
Amber Crepe, No. 3	—	@	.21½
Brown Crepe, Rolled	—	@	.19¼

Latex—

Normal, per lb., carload lots	—	@	.27½

Paras—

Up-River, fine	.29	@	.30
Acre Bolivian, fine	.29	@	.30

Balata—

Brazilian block	—	@	.10

LONDON MARKET

(London Cable Temporarily Discontinued)

Scrap Rubber

Although demand for scrap continues unabated, what with practically all reclaimers operating at near-capacity, scrap rubber dealers have fortunately been able to meet the demand. Stocks are normal and should continue to be so for some time to come. The recent threat of Price Administrator Henderson to put a ceiling on scrap prices if necessary, should tend to keep present prices steady. Current quotations follow:

(Prices to Consumers)

Auto tire peelings	ton 32.00	@	33.00
Mixed auto	ton 16.50	@	17.00
Beadless tires	ton 22.00	@	23.00
Clean solid truck tires	ton 37.50	@	40.00
Boots and shoes	ton 28.00	@	30.00
Arctics, untrimmed	ton 24.00	@	26.00
Inner tubes, No. 1	lb. .11	@	.12
Inner tubes, No. 2	lb. .07¼	@	.07⅝
Inner tubes, Red	lb. .07⅜	@	.07⅞

Reclaimed Rubber

There has been no slack in the feverish demand for reclaim in the past few weeks nor is any such slack expected for the next several months to come. Prices are firm and are expected to continue that way for quite some time. Although consumption of crude rubber has fallen off due to the curtailment program, consumption of reclaim continues at high levels. There has been no change in the price structure since our last report. Current quotations follow:

Shoe

Unwashed	lb. .07	@	.07¼

Tube

No. 2 (Compounded)	lb. .10½	@	.13¼
Red Tube	lb. .12	@	.12¼

Tires

Black (acid process)	lb. .07½	@	.07¾
Black, selected tires	lb. .06½	@	.06¾
Truck, Heavy Gravity	lb. .08½	@	.08¾

Miscellaneous

Mechanical blends	lb. .04½	@	.05½
White	lb. .13½	@	.14½

Tire Fabrics

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb. .42¾	@	.43
Peeler, carded, 23/4/3	lb. .43¾	@	.44
Peeler, carded, 15/3/3	lb. .40¾	@	.41
Peeler, carded, 15/4/2	lb. .40¾	@	.41
Peeler, carded, 13/3/3	lb. .39¾	@	.40

CHAFERS

Carded, American, 1 3/16"	lb. —	@	.43
Carded, American, 1"	lb. .33½	@	.46

Cotton

Cotton prices have swung in a 141 point range since our last report. From a price of 18.59 for middling uplands on September 12, the trend took a downward level dropping steadily from day to day, with but few temporary recoveries, based largely on liquidation and hedge sales. A steady influx of small selling orders from the south created market nervousness. Low for the period was reached on September 27, with a quotation of 17.18. A tightening in the spot supply situation at the end of the month resulted in a reversal of the trend and prices climbed, reaching 18.02 on October 4th, but a report from the Crop Reporting Board of the Department of Agriculture, placing the crop for the current season at 11,061,000 bales of 500 pounds gross weight, based on a condition of 64% as of October 1, which was approximately 500,000 bales larger than trade anticipations, again broke the price and it dropped back to 17.37 on October 9, coming back to 17.54 on the following trading day, and dropping to 17.50 today (October 11). Quotations for middling uplands on the Exchange follow:

	Sept. 9	October 11		
	Close	High	Low	Close
October	17.96	16.67	16.67	16.67
December	18.17	16.94	16.81	16.85
March	18.38	17.20	17.07	17.11

Sheetings

48x40	36 in.	5.50	lb.	—	@ 6.909
40x40	36 in.	6.15	lb.	—	@ 6.179
40x36	36 in.	6.50	lb.	—	@ 5.846
48x48	40 in.	2.50	lb.	—	@14.20
48x48	40 in.	2.85	lb.	—	@12.460
56x60	40 in.	3.60	lb.	—	@10.555
48x44	40 in.	3.75	lb.	—	@ 9.733

Ducks

Enameling (single filling)	lb. .40	@	.43
Belting and Hose	lb. .37	@	.38
Single filling, A grade	lb. .19	@	.20
Double filling	lb. .20	@	.21

Closing Rubber Prices on New York Commodity Exchange, Inc.

"New" Standard Contract of 10 Tons

FROM SEPTEMBER 15TH TO OCTOBER 10

Date	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales
Sept. 15	22.40	22.30	——	22.25	22.10	——	22.10	626
16	22.42	22.40	——	22.40	22.15	——	22.20	46
17	22.30	22.30	——	22.35	22.25	——	22.20	53
18	22.35	22.35	——	22.35	22.25	——	22.25	9
19	22.35	22.35	——	22.35	22.25	——	22.00	25
20	——	——	——	——	——	——	——	——
21	——	——	——	——	——	——	——	——
22	22.35	22.35	——	22.40	22.25	——	22.10	2
23	22.35	22.35	——	22.45	22.25	——	22.15	9
24	22.20	22.35	——	22.45	22.25	——	22.15	6
25	22.35	22.35	——	22.45	22.25	——	22.10	10
26	——	——	——	22.45	22.25	——	22.10	28
27	——	——	——	——	——	——	——	——
28	——	——	——	——	——	——	——	——
29	——	——	——	22.45	22.25	——	22.10	14
30	——	——	——	22.45	22.25	——	22.10	3
Oct. 1	——	——	——	22.45	22.25	——	22.15	30
2	——	——	——	22.40	22.25	——	22.30	5
3	——	——	——	22.45	22.25	——	22.30	——
4	——	——	——	——	——	——	——	——
5	——	——	——	——	——	——	——	——
6	——	——	——	22.46	22.25	——	22.25	9
7	——	——	——	22.50	22.30	——	22.25	13
8	——	——	——	22.50	22.30	——	22.30	——
9	——	——	——	22.40	22.30	——	22.40	24
10	——	——	——	22.50	22.30	——	22.40	2

EDITOR'S NOTE: Trading in futures on the Exchange, suspended on August 13, was resumed on September 15, for the sole purpose of liquidating outstanding contracts under a maximum price of 22½ cents per pound.

CHEMICAL MARKETS

New York, Oct. 10, 1941
All Prices F.O.B. Works

ACCELERATORS

Organic

A-1 (Thiocarbanilid)	lb.	.26 @	.35
A-10	lb.	.34 @	.40
A-11	lb.	.52 @	.63
A-19	lb.	.52 @	.65
A-32	lb.	.70 @	.80
A-77	lb.	.42 @	.55
A-100	lb.	.42 @	.55
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.	.55 @	.60
Beutene	lb.	.70 @	.75
Butyl Zimate	lb.	— @	2.15
Captax	lb.	.50 @	.55
Crylene	lb.	.40 @	.47
Di-Ortho-Tolyguanidine	lb.	.44 @	.46
Diphenylguanidine	lb.	.35 @	.45
El-Sixty	lb.	.50 @	.65
Ethyl Zimate	lb.	— @	2.15
Ethylidene aniline	lb.	.42 @	.43
Formaldehyde aniline	lb.	.31 @	—
Guantal	lb.	.40 @	.50
Hepteen	lb.	.35 @	.40
Hexamethylenetetramine	lb.	.33 @	—
Lead Oleate, No. 999	lb.	.13 @	—
Witco	lb.	.15 @	—
Monex	lb.	— @	1.55
Phenex	lb.	.50 @	.55
Pip-Pip	lb.	— @	1.90
R & H 50-D	lb.	.42 @	.43
R-2	lb.	1.40 @	1.80
R-2 Crystals	lb.	2.50 @	2.75
RN-2	lb.	1.40 @	1.80
RN-2 Crystals	lb.	1.90 @	2.15
Rotax	lb.	.60 @	.65
Safex	lb.	1.20 @	1.30
SPDX	lb.	.70 @	.75
Super-Sulphur No. 1	lb.	.50 @	—
No. 2	lb.	.18 @	.20
Thiocarbanilid, drums	lb.	.26 @	.35
Thiurad	lb.	— @	1.75
Trimene	lb.	.55 @	.65
base	lb.	1.05 @	1.20
Triphenylguanidine	lb.	.45 @	—
Tuads	lb.	— @	2.00
Ulto	lb.	1.25 @	1.75
Ureka	lb.	.60 @	.73
Blend B	lb.	.60 @	.75
Blend C	lb.	.56 @	.65
Vulcanex	lb.	.42 @	.43
Vulcanol	lb.	.85 @	—
Zimate	lb.	— @	2.00

Inorganic

Litharge, domestic	lb.	.07 @	.07½
Magnesia, calcined, heavy	lb.	.04 @	—

COLORS

Blacks (See Next Column)

Blues

Prussian	lb.	.36 @	—
Ultramarine	lb.	.16 @	.27

Browns

Mapico	lb.	.11 @	—
Umber, Turkey	lb.	.05 @	.06½

Greens

Chrome	lb.	.23 @	.32
Guignet's Green	lb.	.70 @	—

Reds

Antimony			
crimson, 15/17	lb.	— @	—
sulfur, free	lb.	— @	—
Indian	lb.	.08¾ @	—
Domestic (Maroon)	lb.	.11 @	—
Mapico	lb.	.09¾ @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red	lb.	.09¼ @	—

Whites

Cryptone No. 19	lb.	.05¼ @	.05½
Cryptone CB No. 21	lb.	.05¼ @	.05½
Cryptone ZS-86	lb.	.07¾ @	.08
Cryptone ZS-230	lb.	.07¾ @	.08
Cryptone ZS-800	lb.	.07¾ @	.08
Lithopone:			
Albalith	lb.	.0385 @	.0410
Azolith	lb.	.0385 @	.0410
Ray-bar	lb.	.05½ @	.05¾
Ray-cal	lb.	.05½ @	.05¾
Rayox	lb.	.13½ @	.14¼
Titanox A	lb.	.13½ @	.13¾
Titanox B	lb.	.05½ @	.05¾
Titanox C	lb.	.05¾ @	.05½

Zinc Oxide—American Process

American Azo:			
ZZZ (lead free)	lb.	.06½ @	.06¾
Anaconda, lead free	lb.	.06½ @	.06¾
Horsehead Lead Free Brand:			
Special—3	lb.	.06¾ @	.06¾
XX Red—4	lb.	.06½ @	.06¾
XX Red—72	lb.	.06½ @	.06¾
XX Red—78	lb.	.06½ @	.06¾
XX Red—103	lb.	.06½ @	.06¾
Kadox, black label—15	lb.	.06½ @	.06¾
Red label—17	lb.	.06½ @	.06¾
St. Joe, black label	lb.	.06½ @	.06¾
green label	lb.	.06½ @	.06¾
red label	lb.	.06½ @	.06¾
U. S. P.—7, bbls.	lb.	.09½ @	.09¾

Zinc Oxide—French Process:

Florence White Seal—7 bbls.	lb.	.08½ @	.08¾
Green seal—8	lb.	.08 @	.08¼
Red seal—9	lb.	.07½ @	.07¾

Yellows

Cadmolith	lb.	.50 @	.55
Chrome	lb.	.16 @	—
Mapico	lb.	.06¼ @	—

BLACKS

(In bags, carload lots)

Aerfloted Arrow		.0335 @	—
Certified		.0335 @	—
Certified Spheron		.0335 @	—
Continental		.0335 @	—
Dispersо		.0335 @	—
Dixiedensed		.0335 @	—
Dixiedensed 66		.0335 @	—
Excello		.0335 @	—
Furnex		.03 @	—
Furnex Beads		.03 @	—
Gastex		.03 @	—
Kosmobile		.0335 @	—
Kosmobile 66		.0335 @	—
Micronex (Amarillo)		.0335 @	—
Micronex Beads (Amarillo)		.0335 @	—
Pelletex		.03 @	—
P-33		.0475 @	—
Shell Carbon (Delivered Midwest)		.024 @	—
Supreme		.0335 @	—
Thermax		.02 @	—
Wyex		.0335 @	—

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@24.50
Asbestine	ton	14.00	@18.00
Barium carbonate (98-100%)	ton	47.00	@49.00
Barytes	ton	22.85	@31.50
Bentonite	ton	11.00	@16.00
Blanc fixe, dry	ton	60.00	@67.50
Calcene	ton	37.50	@43.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	45.00	@60.00
heavy	ton	45.00	@55.00
Clay, Aerfloted, Suprex	ton	10.00	@22.00
Crown (f.o.b. plant)	ton	10.00	@ —
Dixie	ton	10.00	@22.50
Langford	ton	—	@ 7.50
McNamee	ton	10.00	@22.50
Par	ton	10.00	@22.50
Witco	ton	10.00	@ —
Cotton Flock (Dark)	lb.	.10½ @	.13
Kalite No. 1	ton	24.00	@50.00
Kalite No. 3	ton	34.00	@60.00
Kalvan	ton	95.00	@121.00
Magnesium carbonate	lb.	.06¼ @	.09¾
Mica	ton	35.00	@44.00
Mineralite	ton	—	@30.00
Pyrax A	ton	6.50	@20.00
Rottenstone (powd. Dom.)	ton	25.50	@37.50
Silene (calcium silicate)	lb.	.04 @	.045
Starch, powdered	cwt.	2.90 @	4.10
Talc, domestic	ton	17.00	@25.00
Whiting, commercial	ton	16.00	@26.00
Columbia Filler	ton	9.00	@14.00
Witco	ton	6.00 @	—
Wood Flour (100 mesh)	ton	30.00	@32.00

MINERAL RUBBER

285°-300° Mineral Rubber	ton	22.00 @	—
Black Diamond	ton	25.00 @	—
Genasco, solid (factory)	ton	— @	—
Hard Hydrocarbon	ton	22.00	@42.00
Parmr. solid	ton	— @	—
Pioneer, MR. solid	ton	— @	—

MISCELLANEOUS

Aromatics—Rodo #0	lb.	3.50 @	4.00
Rodo #10	lb.	4.50 @	5.00
Curodex 19	lb.	2.75 @	—
Curodex 188	lb.	3.50 @	—
Curodex 198	lb.	4.50 @	—
Para-Dors	lb.	4.50 @	—
Aresklene No. 375 (dispersing, wetting and penetrating agent)	lb.	.35 @	.50
Darvan (dispersing agent)	lb.	.30 @	.39
Santomerse S (dispersing, wetting, penetrating and stabilizing agent)	lb.	.11 @	.25
Sponge Paste	lb.	— @	.18
Sunproof	lb.	.23 @	.28
Tackol (tackifier)	lb.	.085 @	.18
Tonox	lb.	.52 @	.61
Ty-Ply R (and S)	gal.	6.75 @	8.75
Unicel (blowing agent)	lb.	.50 @	—

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	3.18 @	3.43
Nitric, 36 degrees	cwt.	5.00 @	5.95
Acids, Fatty			
Laurex	lb.	.15 @	.17½
SL #10	lb.	.12 @	.14
Stearex Beads	lb.	.10 @	.11
Stearic, double pressed	lb.	.12½ @	.13½
Stearite	lb.	.10 @	—

Alkalies

Caustic Soda, 76%	cwt.	2.70 @	3.70
Soda Ash, 58%	cwt.	1.10 @	2.93

Oils

Cycline Oil	gal.	.14 @	.20
Degras, bbls.	lb.	.08¼ @	.08¾
Fluxrite	lb.	.05½ @	.06½
Para-Flux	gal.	.08½ @	.18
Para-Lube	lb.	.425 @	.48
Petrolatum, amber	lb.	.03½ @	.04½
Pigmentaroil, tank cars	gal.	.16 @	—
in drums	gal.	.22½ @	.23½
Pine, steam distilled	gal.	.65 @	.68
Rosin Oil, cmpd.	gal.	.40 @	—
Rubberol	lb.	.13½ @	.14
Rubtack	lb.	.10 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	— @	—
Witco Softener No. 20	gal.	.20 @	—
Woburn No. 8, c.l.	lb.	.06 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06 @	.06½
coal tar	ton	19.00	@22.00
hardwood	ton	16.00	@22.50
pine, 200 lb. gr. wt. bbl.		6.00 @	6.50
Pigmentar, tank cars	gal.	.16 @	—
in drums	gal.	.22½ @	.23½
R. S. L. Resin	lb.	— @	—
Retort Pine Tar, drums	ton	20.00	@26.00

Solvents

Acetone, pure	lb.	.07 @	.10
Benzene, 90%, tank car	gal.	.14 @	—
Beta-Trichlorethane	gal.	— @	.20
Bondogen	lb.	.98 @	1.25
Carbon, bisulfide	lb.	.05½ @	.09
Carbon tetrachloride	gal.	.73 @	1.27
Dichlorethylene	lb.	— @	—
Dipentene, cml., drums	gal.	.38 @	.50
Ethylene dichloride	lb.	.07½ @	.08
Plastogen	lb.	.07¾ @	.12
Reogen (drums)	lb.	.11½ @	.23
Rub-Sol	gal.	.09½ @	—
Trichloreth ylene	lb.	.08 @	.09½
Turpentine, spirits	gal.	.85¼ @	.89¼
dest. dist., drums	gal.	.55 @	.65

Waxes

Beeswax, white	lb.	.56 @	.58
Carnauba, yellow	lb.	.82 @	.84
Ceresin, white, dom.	lb.	.12½ @	.17
Montan, crude	lb.	— @	—
Paraffin			
Yellow crude scale, 124/126	lb.	.06 @	—
Refined, 123/125	lb.	.05¾ @	—

ANTI-OXIDANTS

Agerite Alba	lb.	2.00 @	2.15
Exel	lb.	1.00 @	1.02
Gel	lb.	.57 @	.59
Hipar	lb.	.65 @	.67
Powder	lb.	.52 @	.54
Resin	lb.	.52 @	.54
Resin D	lb.	.52 @	.54
White	lb.	1.25 @	1.60
Albasan	lb.	.70 @	.75
Antox	lb.	— @	.56
B-L-E	lb.	.52 @	.61
Flectol B	lb.	.52 @	.65
Flectol H	lb.	.52 @	.65
Flectol White	lb.	.90 @	1.15
Neozone A, B, C, D, E	lb.	.52 @	.63
Oxynone	lb.	.77 @	.90
Retardex	lb.	.45 @	.48
Santoflex B	lb.	.52 @	.65
Santovar A	lb.	1.15 @	1.40
S.C.R.	lb.	.33 @	.35
Stabilite	lb.	.52 @	.54
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.52 @	.61

MOLD LUBRICANTS

Aresklene	lb.	.35 @	.50
Cocoa Soapstock	lb.	.06 @	.08
Dipex	lb.	.06 @	.08
Lubrex	lb.	.25 @	.30
Mineralite	ton	—	@30.00
Mold Paste	lb.	.12 @	.18
Rubberol	lb.	.13½ @	.14
Sericite	ton	65.00	@75.00
Soap Tree Bark, cut, sifted	lb.	.06 @	.08

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.25 @	—
Amberex Type B	lb.	.18¾ @	—
Black	lb.	.08 @	.12
White	lb.	.08½ @	.13½
Brown	lb.	.08 @	.11¼
Neophax A	lb.	.119 @	—

VULCANIZING INGREDIENTS

Dispersed Sulfur No. 2	lb.	.07½ @	.15
Sulfur Chloride, yellow (drs.)	lb.	.03 @	.08
Sulfur, rubber makers			
Refined (bags)	cwt.	2.40 @	—
Commercial (bags)	cwt.	2.05 @	—
Tellor	lb.	1.75 @	—
Vandex	lb.	1.75 @	—

STATISTICS

Crude Rubber — Latex & Guayule — Reclaim — Tires & Tubes — Automobiles — Rims — Gasoline — Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1924	325,899	173,367,272	23.75	10,309	6,057,637	26.23	315,590
1925	393,370	426,167,504	48.36	14,827	19,847,753	59.76	378,543
1926	409,944	501,131,064	54.57	17,671	22,470,583	56.77	392,273
1927	424,733	338,688,492	35.60	27,775	24,735,488	39.76	396,958
1928	432,633	242,727,423	25.05	32,159	18,128,761	25.17	400,474
1929	560,082	239,177,811	19.06	36,485	16,868,718	20.64	523,597
1930	482,083	139,133,048	12.88	30,205	9,310,205	13.76	451,878
1931	497,176	72,922,845	6.55	25,595	4,255,572	7.42	471,581
1932	409,556	31,936,459	3.48	20,930	2,015,612	4.30	388,626
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	387,280
1934	449,513	97,929,676	9.73	23,848	5,770,109	10.80	425,665
1935	453,134	115,299,448	11.36	11,389	3,084,331	12.09	441,745
1936	467,064	152,072,496	14.54	12,581	4,488,223	15.93	454,483
1937	574,600	237,307,041	18.44	7,902	3,385,433	19.02	566,698
1938	397,620	125,357,730	14.07	5,652	1,799,124	14.21	391,968
1939	469,803	167,558,245	15.92	13,125	5,832,618	19.84	456,678
1940	780,820	303,117,726	17.33	7,060	3,197,136	20.22	773,760
1940:							
July	66,931	26,426,632	17.63	100	49,828	22.20	66,831
Aug.	70,453	27,608,883	17.49	416	183,369	19.69	70,037
Sept.	75,770	29,317,540	17.27	666	349,443	23.43	75,104
Oct.	73,179	27,975,598	17.07	316	123,216	17.38	72,863
Nov.	69,844	26,917,136	17.21	126	52,020	18.45	69,718
Dec.	94,172	36,369,973	17.24	205	94,422	20.52	93,967
1941:							
Jan.	84,201	33,370,482	17.69	292	138,009	21.11	83,909
Feb.	70,745	28,469,753	17.97	327	144,139	19.69	70,418
Mar.	84,991	34,030,846	17.88	329	163,375	22.19	84,662
Apr.	61,288	24,193,639	17.62	238	99,371	18.96	61,054
May	98,438	39,537,574	17.93	370	204,865	24.72	98,068
June	62,124	25,179,498	18.09	476	257,254	24.13	61,648
July	94,622	39,296,581	18.54	423	219,597	23.17	94,199

Note: "Gross Imports" do not include latex or guayule. To secure more accurate figures for "Net Imports" latex and guayule figures (shown below) should be added and the re-export figure deducted from the total. Annual figures for 1924-36 were revised in February, 1937.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule Tons	Guayule Dollars	Balata Tons	Balata Dollars	Jelutong Tons	Jelutong Dollars	Liquid Latex (1) Tons	Liquid Latex (1) Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,272	3,537,510
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,394	4,686,743
1927	5,018	2,674,957	582	477,246	7,785	2,448,657	1,495	1,170,650
1928	3,077	1,755,685	731	430,855	7,552	2,540,059	4,007	2,121,786
1929	1,275	545,175	728	566,964	8,204	2,458,126	3,729	1,788,391
1930	1,096	347,388	502	422,684	5,907	1,403,244	4,458	1,508,786
1931	....	.....	1,207	411,380	5,777	1,019,010	4,675	888,909
1932	....	.....	707	147,403	4,607	616,596	5,112	601,999
1933	....	.....	1,659	2,261,869	5,990	944,895	11,085	1,833,671
1934	398	75,349	1,054	438,209	4,987	943,752	13,107	3,643,221
1935	459	86,835	615	188,384	5,644	1,063,126	13,553	3,782,222
1936	1,229	286,552	535	199,368	6,163	1,296,364	19,852	6,659,899
1937	2,694	745,873	354	151,344	7,109	2,017,786	23,185	10,213,670
1938	2,485	623,819	509	181,140	9,132	2,944,504	11,878	4,147,418
1939	2,232	463,345	694	265,553	6,640	1,603,418	27,438	10,467,552
1940	3,634	758,007	648	300,500	7,451	2,449,137	33,789	14,593,466
1940:								
July	262	53,058	65	20,553	336	115,599	2,281	993,411
Aug.	297	59,464	61	22,638	701	276,642	2,278	1,022,531
Sept.	250	49,845	40	19,245	712	246,641	2,953	1,337,487
Oct.	381	77,286	70	38,092	1,150	382,168	1,156	512,153
Nov.	392	78,587	67	43,939	445	152,297	2,308	1,169,086
Dec.	278	62,586	54	39,471	1,102	341,876	3,534	1,539,957
1941:								
Jan.	447	104,128	57	32,910	698	221,911	2,184	1,019,741
Feb.	283	65,942	41	22,790	768	245,732	2,946	1,279,648
Mar.	426	98,187	36	16,147	715	258,514	1,707	774,225
Apr.	423	95,916	64	18,533	514	189,520	1,594	648,217
May	334	76,414	61	44,381	822	287,249	2,632	1,117,226
June	383	86,949	67	30,470	552	179,779	2,070	936,944
July	411	94,874	100	34,119	830	215,176	2,049	930,126

(1) Weight given in pounds of dry rubber contained in latex.
Note: Annual figures for 1924-1936 revised on basis of information received on February 8, 1937.

U. S. Consumption of Crude Rubber

(Including Latex)

	Figures on Monthly Basis: 1934	1935	1936	1937	1938	1939	1940	1941
Jan.	39,190	46,636	48,631	50,879	31,265	47,387	58,061	65,989
Feb.	40,515	42,720	36,841	51,950	25,357	43,422	52,078	62,692
Mar.	47,003	42,153	42,813	54,129	32,389	51,416	52,454	69,024
Apr.	44,853	44,247	52,031	51,859	29,730	45,268	52,361	71,374
May	42,918	41,101	50,612	51,795	30,753	45,484	54,513	71,365
June	40,147	36,156	52,772	51,860	32,540	48,438	47,834	84,912
July	32,553	35,917	48,250	43,703	34,219	44,975	48,354	68,653
Aug.	33,216	38,775	46,777	41,506	40,552	51,740	53,307	55,365
Sept.	30,258	37,086	46,449	43,945	40,183	51,402	52,469	
Oct.	31,253	41,969	49,637	38,754	42,850	57,155	59,644	
Nov.	34,748	42,310	50,433	34,025	49,050	55,677	57,716	
Dec.	36,569	42,474	49,754	29,195	48,143	49,636	59,709	
Tot.	453,223	491,544	575,000	543,600	437,031	592,000	648,500	

Note: The above figures are based on the annual surveys conducted by the Leather and Rubber Division, Bureau of Foreign & Domestic Commerce, Washington, D. C., with the exception of those for the current year which are estimates made by the Rubber Manufacturers Association. They are revised frequently and the latest available issue should always be consulted for the most reliable figures.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks	Year	Production	Consumption Tons	Consumption % to Crude	Stocks
1931	129,690	123,000	35.1	21,714	1936	150,571	141,486	24.6	19,000
1932	75,656	77,500	23.3	16,334	1937	185,033	162,000	29.8	28,800
1933	93,587	85,000	21.2	17,780	1938	122,400	120,800	29.9	23,000
1934	108,162	100,855	22.3	20,000	1939	186,000	170,000	28.7	25,250
1935	122,948	117,523	23.9	17,000	1940	208,971	190,244	29.3	32,636
	Figures on Monthly Basis								
1940:									
Jan.	19,239	16,341	28.1	27,089	July	14,299	14,539	30.1	27,129
Feb.	17,938	15,629	30.0	27,962	Aug.	17,161	14,464	27.1	28,526
Mar.	17,182	16,200	30.9	27,524	Sept.	16,379	14,835	28.3	29,039
Apr.	16,518	16,573	31.7	26,492	Oct.	19,300	16,807	28.2	30,816
May	17,499	15,984	29.3	27,141	Nov.	17,636	16,312	28.3	31,459
June	16,581	15,163	31.7	27,701	Dec.	19,239	17,397	29.1	32,636
1941:									
Jan.	20,413	19,086	28.9	33,380	July	23,111	21,725	31.6	36,751
Feb.	19,506	18,222	29.1	33,654	Aug.	24,065	20,864	38.7	39,052
Mar.	22,006	19,611	28.4	35,028	Sept.	.....	.....	...	.....
Apr.	21,574	20,427	28.6	35,336	Oct.	.....	.....	...	.....
May	22,775	21,405	30.0	35,871	Nov.	.....	.....	...	.....
June	23,790	22,559	26.6	36,265	Dec.	.....	.....	...	.....

Note: The above figures are based on the annual surveys conducted by the Leather and Rubber Division, Bureau of Foreign & Domestic Commerce, Washington, D. C., with the exception of those for the current year which are estimates made by the Rubber Manufacturers Association. They are revised frequently and the latest available issue should always be consulted for the most reliable figures. The annual figures are more accurate. Stocks shown are those on hand at the end of the indicated month or year.

U. S. Consumption of Gasoline

(Bureau of Mines Statistics)
(In Thousands of Barrels of 42 Gallons)

	1939*	1940	1941*		1939*	1940	1941
January	38,089	40,370	45,344	August	54,025	55,346	.....
February	34,928	37,557	42,001	September	49,505	52,297	.....
March	43,042	44,607	48,760	October	49,854	53,807	.....
April	44,264	47,683	55,154	November	47,407	49,074	.....
May	49,766	52,946	59,307	December	43,807	46,413	.....
June	50,133	55,459	58,360				
July	50,689	53,865	63,093	Total	555,509	589,424	.....

* Revised.

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1929	24,141,502	1933	8,713,962	1937	22,257,564
1930	17,364,096	1934	12,255,118	1938	10,612,138
1931	11,255,800	1935	18,664,107	1939	17,471,914
1932	6,261,336	1936	20,790,194	1940	19,378,558
1941		1941		1941	
January ...	2,032,121	May	2,407,864	September .	1,811,267
February ..	2,131,211	June	2,308,986	October ...	.....
March	2,665,961	July	2,061,144	November .	.....
April	2,682,225	August	1,532,032	December ..	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

1939	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave
July	16½	—	16½	16½	16½	16½	16⅝	—	—	16½	16½	16⅞	16⅞	16½	—	16⅞	16⅝	16⅝	16⅛	16⅜	16⅛	—	—	16⅛	16⅞	16⅞	16⅞	16⅝	—	—	16⅝	16½
August	16⅞	18¾	16⅜	—	—	16⅛	16⅛	16⅜	16⅜	16⅛	16⅜	—	—	—	16⅜	—	16⅝	16⅝	16⅛	16⅜	16⅛	—	16⅜	—	16⅛	16⅛	—	16⅝	16⅜	16⅜	16⅛	16⅜
September	19⅞	18¾	—	16⅛	24	21½	19½	20	22	19⅜	23¾	23	—	22	22	—	—	22	21¾	21½	22	21¾	21¾	21¾	23	20	20	20	19¾	20	20	21¼
October	20	20⅛	19½	19⅛	19½	20½	19	—	19	19⅛	20½	—	22¾	19⅛	22	19¾	—	22	20½	20½	20⅜	20⅛	20⅜	20⅜	20⅛	20	20	20⅛	20	20⅛	20⅜	19⅞
November	20¾	20⅛	20⅜	20⅜	20⅜	20½	20⅜	20⅜	20⅜	—	20½	20⅞	20½	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	—	—	20⅜	20⅜	20⅜	20⅜	20⅜	—	—	20
December	20	20	—	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	20⅛	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	—	20½	20⅜	20⅜	20⅜	20⅜	—	—	—	20⅜	—	19⅜	19⅜	20	—	—	
1940																																
January	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	—	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	—	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	—	19⅛	19⅜	18⅞	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	19
February	18⅜	18⅜	18⅜	—	18⅜	18⅜	18⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	18⅞	—	—	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	—	18⅞
March	18⅞	18⅜	—	18½	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅞	19	19	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	—	18⅜
April	18⅛	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	18⅜	19	18⅜	18⅜	18⅜	18⅜	—	19	18⅞	19⅜	18⅜	20	20	20	20	19½	19½	19½	19½	19½	19½	19½	19½	—	19½
May	19⅜	19⅜	20	20⅜	20	20	20	20½	19⅜	19⅜	19⅜	23½	23¾	24	23½	23⅜	19⅜	20	21¾	21	21	20½	20½	20¼	20¼	20¼	20¼	20¼	20½	20½	21	21¼
June	22	21½	21½	21½	21¾	21¾	21¾	21¾	20⅜	22½	23½	22¾	22¾	22¾	23½	23⅜	22⅜	22⅜	22⅜	22⅜	23	23	23	23	23	23	23	23	23	23	23	22¾
July	21¾	21½	20½	20½	20½	20½	20½	20½	20⅜	20½	20½	20½	20½	20½	20½	20½	22⅜	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	22½
August	19⅜	19⅜	—	—	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19½	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	20⅛	20	19⅜
September	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	—	19⅜
October	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜
November	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜
December	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1941																																
January	20⅞	—	20½	20½	20½	20½	20⅜	20⅜	20⅜	20¼	20⅞	—	—	20½	19¼	19¼	19⅛	19⅛	19⅛	19⅛	19¼	21	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜
February	19⅜	20⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	19⅜	20½	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜	20⅜
March	22⅞	21⅞	21⅞	22	21⅞	21⅞	21⅞	21⅞	21⅞	22	22	22	22⅞	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
April	23⅜	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
May	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
June	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
July	23⅞	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾	21¾
August	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
September	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝	22⅝
October	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛	22⅛

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Markets)

Average Price per Pound for Years 1913-1932

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1914	65.13	1918	60.15	1922	17.50	1926	48.50	1930	11.98
1915	65.85	1919	48.70	1923	29.45	1927	37.72	1931	6.17
1916	72.50	1920	36.30	1924	26.20	1928	22.48	1932	3.49
1917	72.23	1921	16.36	1925	72.46	1929	20.59	1933	5.96

Average Monthly Price per Pound Since 1933

	1934 Cents	1935 Cents	1936 Cents	1937 Cents	1938 Cents	1939 Cents	1940 Cents	1941 Cents
Jan.	9.32	13.10	14.35	21.37	14.63	15.75	19.06	19.88
Feb.	10.45	12.92	15.48	21.33	14.71	15.93	18.83	20.43
Mar.	11.01	11.51	15.89	24.09	13.55	16.26	18.58	22.17
Apr.	12.10	11.55	15.98	23.44	11.84	15.87	19.16	22.74
May	13.26	12.05	15.62	21.14	11.57	16.07	21.21	23.90
June	13.51	12.57	15.85	19.29	12.57	16.37	22.20	21.88
July	14.60	12.10	16.49	18.86	15.37	16.51	21.12	22.19
Aug.	15.47	11.98	16.25	18.37	16.08	16.67	19.62	22.70
Sept.	15.36	11.55	16.46	18.55	16.15	21.24	19.28	22.57
Oct.	13.96	12.62	16.55	16.28	16.89	19.89	20.33	
Nov.	13.04	13.15	17.97	14.60	16.24	20.21	21.04	
Dec.	12.98	13.28	20.01	15.41	16.05	20.01	20.76	
Average for Year	12.92	12.37	16.41	19.39	14.64	17.57	20.10	

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	1941 May	1941 June	1941 July	1941 Aug.	Day	1941 May	1941 June	1941 July	1941 Aug.
1	14	—	—	—	16	14 1/16	—	—	—
2	14	—	—	—	17	—	—	—	—
3	—	13 7/16	—	—	18	—	—	—	—
4	—	13 15/32	—	—	19	14	—	—	—
5	—	13 29/32	—	—	20	13 13/32	—	—	—
6	—	13 29/32	—	—	21	13 7/8	—	—	—
7	—	—	—	—	22	13 7/8	—	—	—
8	—	—	—	—	23	13½	—	—	—
9	—	—	—	—	24	—	—	—	—
10	—	—	—	—	25	—	—	—	—
11	—	—	—	—	26	13 15/32	—	—	—
12	—	—	—	—	27	13 15/32	—	—	—
13	—	—	—	—	28	13 7/16	—	—	—
14	—	—	—	—	29	13 7/16	—	—	—
15	14	—	—	—	30	13 29/32	—	—	—
					31	—	—	—	—

Note: No quotations have been made on the London Exchange since June 6.

Average Monthly Price Per Pound

Month	1938 Pence	1939 Pence	1940 Pence	1941 Pence	Month	1938 Pence	1939 Pence	1940 Pence	1941 Pence
Jan.	7.077	7.926	11.793	12.415	Aug.	7.841	8.545	12.818	
Feb.	7.029	7.942	12.577	12.769	Sept.	7.918	9.634	11.964	
Mar.	6.590	8.120	11.651	13.967	Oct.	8.355	10.177	11.813	
Apr.	5.793	7.910	10.980	14.228	Nov.	8.111	11.210	11.801	
May	5.632	8.002	11.600	13.670	Dec.	8.005	11.559	11.963	
June	6.147	8.216	13.046	—	Average for Year.	7.164	8.959	12.035	
July	7.464	8.271	12.410	—					

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	1941 Aug.	1941 Sept.	1941 Oct.	Date	1941 Aug.	1941 Sept.	1941 Oct.	Date	1941 Aug.	1941 Sept.	1941 Oct.
1	16.88	—	17.91	11	16.76	18.54	17.50	22	17.00	17.34	
2	17.60	17.57	17.81	12	16.35	18.59		23	16.94	17.39	
3	—	17.91	17.74	13	16.91	18.59		24	—	17.54	
4	17.47	17.97	18.02	14	16.73	—		25	16.94	17.42	
5	17.24	18.01	—	15	16.65	18.41		26	17.30	17.23	
6	17.33	18.16	17.86	16	16.69	18.26		27	17.44	17.18	
7	17.30	—	17.75	17	—	18.45		28	17.38	—	
8	17.21	18.40	17.46	18	16.70	18.24		29	17.42	17.34	
9	16.97	18.61	17.37	19	16.80	17.98		30	17.57	17.48	
10	—	18.26	17.54	20	17.16	17.69		31	—	—	
				21	16.94	—					

Average Monthly Price Per Pound

	1938 Cents	1939 Cents	1940 Cents	1941 Cents		1938 Cents	1939 Cents	1940 Cents	1941 Cents
Jan.	8.57	8.94	11.19	10.66	Aug.	8.41	9.30	9.84	17.06
Feb.	8.91	8.97	11.10	10.87	Sept.	8.17	9.30	9.69	17.94
Mar.	8.92	9.00	10.90	11.08	Oct.	8.61	9.24	9.62	
Apr.	8.76	8.87	10.89	11.48	Nov.	9.08	9.73	9.97	
May	8.50	9.56	10.33	12.97	Dec.	8.72	10.97	10.18	
June	8.38	9.88	10.72	14.66	Average for Year	8.66	9.46	10.40	
July	8.85	9.71	10.42	16.55					

Stocks of Crude Rubber

(All figures are in long tons)

ON HAND OR AFLOAT TO THE U. S.

End of	ON HAND 1939	1940	1941	AFLOAT 1939	1940	1941	TOTAL 1939	1940	1941
Jan.	220,727	139,304	309,411	48,210	90,285	153,169	268,937	229,589	462,580
Feb.	207,882	129,023	320,372	55,814	112,257	136,955	263,696	241,280	457,327
Mar.	201,752	134,871	338,147	55,981	113,619	140,228	257,733	248,490	478,375
Apr.	188,074	152,645	329,767	57,918	102,557	153,484	245,992	255,202	483,251
May	187,980	148,881	359,234	54,046	109,364	147,459	242,026	258,245	506,693
June	173,493	154,313	339,108	51,274	119,138	175,499	224,767	273,451	514,607
July	165,450	175,455	395,216	52,990	139,629	132,304	218,440	315,084	527,520
Aug.	152,029	194,760	444,890	66,717	141,286	90,591	218,746	336,046	535,481
Sept.	136,824	220,597		68,310	137,888		205,134	358,485	
Oct.	119,404	235,353		100,500	166,837		219,904	402,190	
Nov.	105,205	250,412		114,044	158,095		219,249	408,507	
Dec.	125,800	288,864		91,095	145,950		216,895	434,814	

Note: Above figures include stocks held by United States Government.

STOCKS OUTSIDE REGULATED AREAS

(Figures from the International Rubber Regulation Committee)

1940	Singapore and Penang	Para and Manaos	United Kingdom	United States	Total
August	40,395	1,580	25,000*	212,774	279,749
September	29,069	2,559	25,000*	241,538	298,166
October	33,613	3,084	30,000*	259,140	325,837
November	33,778	3,697	30,000*	276,943	344,418
December	26,773	2,165	35,000*	318,486	382,424
1941					
January	37,145	2,151	40,000*	309,411	388,707
February	46,913	2,510	40,000*	320,372	409,795
March	41,005	1,200	40,000*	338,147	420,352
April	42,085	2,205	40,000*	329,767	414,057
May	44,610	1,768	40,000*	364,107	450,485
June	43,263	915	40,000*	339,108	423,286
July	41,534	1,063	40,000*	395,216	477,813

* Estimated.

STOCKS INSIDE REGULATED AREAS

(Figures from the International Rubber Regulation Committee)

1940	Malaya	N.E.I.[1]	Ceylon [1]	Other *	Total
August	39,950	38,251	9,771	4,256	92,228
September	44,730	39,614	9,384	4,124	97,852
October	42,239	37,720	9,158	4,407	93,524
November	43,693	39,267	11,675	3,997	98,632
December	48,787	48,622	11,850	4,124	113,383
1941					
January	47,198	45,137	13,196	4,329	109,860
February	55,512	48,390	14,677	4,064	122,743
March	44,432	46,492	13,841	4,210	108,975
April	53,237	46,755	14,432	4,009	118,433
May	46,511	49,184	.....	3,772	.....
June	46,758	51,319	.....	4,432	.....
July	49,666	.....	.....	4,113	.....

(1) Estates and Dealers. (*) Estimated.

RUBBER STOCKS AFLOAT

	Afloat for United States	Afloat for Europe	All Other Afloat	Total Afloat
End of: 1940				
August	141,286	55,000	53,714	255,000
September	137,033	60,000	67,967	265,000
October	166,837	60,000	38,163	265,000
November	158,095	60,000	31,905	250,000
December	145,950	60,000	44,050	250,000
End of: 1941				
January	153,169	60,000	51,831	265,000
February	136,955	60,000	48,045	245,000
March	140,228	60,000	59,772	260,000
April	153,484	60,000	61,516	275,000
May	147,459	60,000	47,541	255,000
June	175,499	60,000	39,501	275,000
July	132,304	60,000	47,696	240,000
August	90,591	60,000	.....	.....

Note: *Total Afloat* figures are estimated at 1½ months' world shipments by the International Rubber Regulation Committee. *Afloat for U. S.* is supplied by the Rubber Manufacturers Association. *Afloat for Europe* is estimated. *All Other Afloat* is determined by subtraction.

TOTAL WORLD STOCKS

At End of:	1936	1937	1938	1939	1940	1941
January	600,479	454,249	549,762	497,665	433,841	753,021
February	599,355	445,265	565,833	479,578	429,551	769,193
March	583,318	447,856	586,666	460,723	447,472	783,737
April	567,172	428,249	586,291	438,252	465,345	765,521
May	541,871	413,134	568,158	429,979	470,981	777,429
June	520,255	434,250	573,136	407,640	500,774	771,229
July	519,074	445,782	580,654	418,639	547,708	787,120
August	500,520	457,462	565,394	397,345	579,119	.....
September	493,585	470,768	551,447	396,867	631,888	.....
October	486,159	479,398	540,976	413,274	651,775	.....
November	466,491	493,266	512,196	395,217	659,308	.....
December	466,576	545,533	482,852	391,125	702,089	.....
Monthly Avge.	528,738	460,022	555,280	427,192	543,321	.....

Note: Figures prior to 1941 represent principal world stocks only, as supplied by the Department of Commerce. Figures since 1941 represent total world stocks, as compiled by the Commodity Exchange, Inc.

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Production Figures on Quarterly Basis

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	13,437	13,355	11,376	15,565	7,314	13,946	14,896	16,333
Apr.-June	13,565	12,597	14,892	15,834	7,380	13,759	15,636	18,259
July-Sept.	9,822	11,312	14,914	12,207	10,794	15,182	13,877	
Oct.-Dec.	10,406	12,099	14,858	9,704	12,360	14,726	14,777	
Total	47,230	49,363	56,040	53,310	37,848	57,613	59,186	

Shipment Figures on Quarterly Basis

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	10,730	11,154	10,554	14,143	7,388	12,445	12,791	15,263
Apr.-June	14,998	13,473	15,940	15,741	9,564	15,107	17,595	21,447
July-Sept.	11,648	13,489	14,037	13,106	11,243	15,791	12,904	
Oct.-Dec.	9,310	12,066	12,855	10,495	12,098	14,165	15,484	
Total	46,686	50,182	53,386	53,485	40,293	57,508	58,774	

Inventory Figures [2]

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	11,651	11,675	8,762	12,004	10,547	9,963	10,789	10,149
Apr.-June	10,219	10,755	7,556	12,081	8,337	8,632	8,871	7,079
July-Sept.	8,419	8,288	8,690	11,200	7,859	8,080	9,837	
Oct.-Dec.	9,455	8,196	10,717	10,383	8,166	8,665	9,127	

Figures for Recent Months

	PRODUCTION 1939	1940	1941	SHIPMENTS 1939	1940	1941	INVENTORY [2] 1939	1940	1941
July	4,595	4,788	5,603	5,143	4,318	6,456	8,103	9,350	6,235
Aug.	5,511	4,676	5,005	4,990	4,123	5,400	8,691	9,911	5,834
Sept.	5,076	4,413	....	5,658	4,462	....	8,080	9,837	....

AUTOMOBILE INNER TUBES

Production Figures on Quarterly Basis

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	12,823	12,553	11,891	15,831	7,314	12,383	12,801	15,349
Apr.-June	13,191	11,631	14,624	15,413	7,380	11,847	13,703	17,631
July-Sept.	10,321	11,270	15,320	12,038	10,794	13,118	12,425	
Oct.-Dec.	9,891	12,425	15,201	9,092	12,360	13,300	13,308	
Total	46,226	47,879	57,036	52,374	37,848	50,648	52,237	

Shipment Figures on Quarterly Basis

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	10,640	11,252	11,367	14,606	7,387	11,422	11,683	14,265
Apr.-June	14,553	11,928	15,113	15,495	9,564	13,010	14,978	18,617
July-Sept.	11,545	13,251	15,069	12,901	11,243	13,449	11,344	
Oct.-Dec.	8,306	11,636	12,874	9,765	12,099	13,309	14,209	
Total	45,044	48,067	54,423	52,767	40,293	51,190	52,214	

Inventory Figures [2]

Quarter	1934	1935	1936	1937	1938	1939	1940	1941
Jan.-Mar.	10,244	10,406	8,660	11,993	10,547	8,752	8,110	8,143
Apr.-June	8,795	10,050	8,075	11,833	8,337	7,549	6,848	7,054
July-Sept.	7,639	7,565	8,595	11,326	7,859	7,206	7,970	
Oct.-Dec.	9,180	8,231	10,945	10,312	8,166	7,036	7,017	

Figures for Recent Months

	PRODUCTION 1939	1940	1941	SHIPMENTS 1939	1940	1941	INVENTORY [2] 1939	1940	1941
July	3,905	4,020	5,288	4,150	3,793	5,920	7,323	7,096	6,357
Aug.	4,757	4,306	4,444	4,309	3,600	4,783	7,799	7,794	6,071
Sept.	4,457	4,099	....	4,991	3,952	....	7,206	7,970	....

[1] These figures are based on reports received from the Rubber Manufacturers Association. They are revised frequently and the latest available issue should be consulted for most reliable figures.

[2] Stocks held by manufacturers at end of period indicated.

Automobile Production

Year	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,126
1934	2,753,111	2,177,919	575,192	116,852	92,647	24,205	2,869,963
1935	3,946,934	3,252,244	694,690	172,877	135,562	37,315	4,119,811
1936	4,454,115	3,669,528	784,587	162,159	128,369	33,790	4,616,274
1937	4,808,974	3,915,889	893,085	207,463	153,046	54,417	5,016,437
1938	2,489,085	2,000,985	488,100	166,086	123,761	42,325	2,655,171
1939*	3,577,292	2,866,796	710,496	155,426	108,369	47,057	3,732,718
1940	4,469,354	3,692,328	777,026	222,984	110,126	112,858	4,692,338
1941							
Jan.*	500,863	411,233	89,630	23,195	11,990	11,205	524,058
Feb.*	485,616	394,513	91,103	23,710	10,647	13,063	509,326
Mar.*	507,805	410,196	97,609	26,044	12,093	13,951	533,849
Apr.*	462,270	374,979	87,291	27,584	12,091	15,493	489,854
May	518,748	417,698	101,050	26,585	9,840	16,745	545,333
June	520,521	418,983	101,538	25,753	8,538	17,215	546,274
July *	444,241	343,748	100,493	24,654	3,849	20,805	468,895
Aug.	147,600	78,529	69,071	17,192	3,160	14,032	164,792
Sept.	.....	.....	.....	.....	.....	.....	.....

* Revised.

Note: U. S. figures represent factory sales; Canadian, production.

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA							NETHERLAND INDIES						
	Gross Exports	Imports	Net Exports	Ceylon	India & Burma	Sarawak	British North Borneo	Thailand	Java & Madura	Sumatra E. Coast	Other N.I.	Indo-China	Amazon Valley	All Other	World Total
1923	282,016	70,432	181,584	39,971	9,416	5,705	4,237	1,718	32,930	46,344	37,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,208	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,135	6,079	4,627	52,186	71,413	121,231	8,203	24,208	16,017	621,536
1927	371,522	182,845	188,677	55,566	11,521	10,935	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	400,430	140,787	259,643	57,247	10,700	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,090	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,306	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1933	573,412	167,377	406,035	63,351	4,527	10,874	7,355	7,765	73,851	91,561	149,650	18,394	9,883	2,737	846,312
1934	677,361	211,803	465,558	79,746	10,492	17,233	11,103	17,545	87,400	112,058	175,470	20,170	8,903	2,985	1,008,663
1935	590,819	174,652	415,667	54,316	13,968	19,465	8,883	28,327	57,488	78,325	139,297	28,816	11,275	8,745	864,574
1936	520,286	167,799	352,487	49,692	14,724	21,243	8,177	33,702	61,307	84,577	152,205	40,782	14,193	11,466	845,431
1937	681,618	213,446	468,192	70,353	17,015	25,922	13,213	5,551	84,085	139,632	207,863	43,399	15,576	13,063	1,133,864
1938	526,911	156,101	370,810	49,528	15,178	17,792	9,512	41,080	57,536	94,501	145,909	58,518	14,618	12,920	887,892
1939	553,324	177,851	375,473	61,026	15,881	24,014	11,864	41,266	72,786	117,791	181,272	65,140	13,892	22,224	1,002,629

	British Malaya [1]	N.E.I.	Ceylon [2]	India & Burma [2]	North Borneo	Sarawak	Thailand	Indo-China	Oceania	Africa [2]	Liberia	South America	Mexico (Guayule)	Grand Total
1940	540,417	536,740	88,894	23,317	17,623	35,166	43,940	64,437	2,267	10,103	7,223	17,601	4,106	1,391,834
1940:														
June	45,471	44,834	5,603	1,553	1,421	4,077	2,178	2,730	163	727	405	1,080	101	110,348
July	42,861	60,482	7,330	1,194	1,767	2,494	4,253	4,045	169	800	342	1,035	443	127,215
Aug.	45,872	45,078	8,139	1,332	1,593	2,640	4,545	7,337	285	800	308	1,233	327	120,729
Sept.	58,892	44,009	9,985	1,319	1,743	2,404	3,247	9,303	100	800	323	1,295	200	133,715
Oct.	52,767	50,139	8,127	1,841	1,693	2,564	3,355	2,082	200	800	600	1,860	200	126,228
Nov.	36,045	37,387	5,623	2,626	1,130	3,360	3,463	6,715	200	800	600	1,300	200	99,649
Dec.	56,263	35,325	10,700	3,405	1,028	3,520	5,343	9,000	200	600	813	1,427	392	128,216
1941:														
Jan.	37,804	58,593	7,858	955	2,085	2,445	2,137	9,058	333	800	750	2,103	288	125,209
Feb.	27,115	42,091	4,346	1,022	1,686	2,922	4,137	1,995	200	800	828	1,814	414	89,370
Mar.	56,651	53,233	6,074	1,285	1,154	3,726	5,712	6,286	200	800	958	2,835	250	139,164
Apr.	40,590	48,915	6,991	1,164	2,175	3,118	4,271	....	250	800	750	2,009	250	111,283
May	53,062	48,099	7,786	1,019	1,237	3,849	1,841	6,225	200	800	180	1,080	250	125,628
June	51,247	48,496	8,925	822	1,020	3,195	2,831	7,318	200	800	750	1,510	250	127,364
July	53,373	53,381	7,387	666	2,027	3,799	3,614	5,000	200	800	750	1,253	250	132,500

(1) Including Brunei and Labuan; figures shown represent rubber which has actually been shipped and include rubber from the free stocks in Singapore and Penang. (2) Exports of domestic produce. (3) Exclusive of Liberia. Notes: Figures shown prior to 1940 were furnished by the United States Department of Commerce. Figures since 1940 were furnished by the International Rubber Regulation Committee, which accounts for the difference in the principal producing countries shown. Many figures for current months are provisional only and are later revised when more definite statistics are available. Therefore, it is suggested that figures from the most recent issue should be taken as more reliable.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	5,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,043	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,321	11,391	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,056	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	772,803
1934	439,172	158,482	49,560	59,330	28,439	69,905	21,398	47,271	9,642	9,115	3,758	12,418	6,900	10,999	926,389
1935	455,758	128,829	51,450	62,899	26,870	57,567	21,880	37,572	9,978	7,593	4,068	11,878	8,140	11,245	895,727
1936	475,359	—2,591	57,032	71,794	27,871	61,223	16,534	30,967	14,109	9,648	2,888	11,236	6,668	8,772	791,510
1937	592,394	92,707	59,871	98,170	36,088	62,311	24,733	30,462	19,164	14,970	4,343	4,680	2,400	13,063	1,055,356
1938	406,343	133,079	59,660	90,200	25,696	45,836	28,170	25,650	11,944	11,309	5,092	16,034	2,400	9,936	871,349
1939	486,348				31,615	42,352			15,426	9,612	7,051				
1940	811,564														
1940:															
Jan.	71,565	450	5,000*	....	5,047	4,540	1,500*	2,000*	1,921	891	682	1,200*	200*	....	....
Feb.	41,797	7,500	5,000*	....	3,508	5,241	1,500*	2,000*	1,846	694	495	1,200*	200*	....	....
Mar.	58,302	14,200	5,000*	....	3,062	6,057	1,500*	2,000*	1,784	....	627	1,200*	200*	....	....
Apr.	70,135	16,400	5,000*	....	3,096	2,000*	1,500*	2,000*	1,612	....	....	1,200*	200*	....	....
May	50,610	10,000	5,000*	....	3,108	2,500*	1,500*	2,000*	2,128	....	....	1,200*	200*	....	....
June	53,266	9,500	5,000*	....	1,062	3,000*	1,500*	2,000*	1,181	....	....	1,200*	200*	....	....
July	69,496	19,500	5,000*	....	5,112	3,000*	1,500*	2,000*	1,902	....	....	1,200*	200*	....	....
Aug.	72,612	21,250	5,000*	....	4,605	4,500*	1,500*	2,000*	2,508	....	....	1,200*	200*	....	....
Sept.	78,306	25,940	5,000*	....	2,743	....	1,500*	2,000*	2,485	....	....	1,200*	200*	....	....
Oct.	74,400	.....	5,000*	....	3,336	....	1,500*	2,000*	590	....	....	1,200*	200*	....	....
Nov.	72,775	.....	5,000*	....	5,451	....	1,500*	2,000*	1,366	....	....	1,200*	200*	....	....
Dec.	97,794	.....	5,000*	....	7,437	....	1,500*	2,000*	721	....	....	1,200*	200*	....	....
1941:															
Jan.	86,541	.....	5,000*	....	6,290	....	1,500*	2,000*	1,065	....	....	1,200*	200*	....	....
Feb.	73,647	.....	5,000*	....	3,770	....	1,500*	2,000*	1,717	....	....	1,200*	200*	....	....
Mar.	86,794	.....	5,000*	....	3,879	....	1,500*	2,000*	3,486	....	....	1,200*	200*	....	....
Apr.	63,071	.....	5,000*	....	2,531	....	1,500*	2,000*	2,326	....	....	1,200*	200*	....	....
May	101,034	.....	5,000*	....	5,596	....	1,500*	2,000*	1,549	....	....	1,200*	200*	....	....
June	64,101	.....	5,000*	....	2,818	....	1,500*	2,000*	1,373	....	....	1,200*	200*	....	....
July	96,681	.....	5,000*	....	4,143	....	1,500*	2,000*	....	....	....	1,200*	200*	....	....
Aug.	105,056	.....	5,000*	....	....	....	1,500*	2,000*	....	....	....	1,200*	200*	....	....

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]—United States imports of guayule are included in this compilation. *—Figure is provisional; final figure will be shown when available.

NOTE: ANNUAL FIGURES ARE MORE ACCURATE; THEY ARE REVISED AT THE END OF THE FOLLOWING YEAR.

The WHERE-TO-BUY Section of THE RUBBER AGE in which are listed the Products and Services of the Leading Suppliers to the Industry.

The Market Place

If what you are seeking is not listed here, write to the Service Department of THE RUBBER AGE, 250 West 57th St., New York, N. Y.

Chemicals and Compounding Materials

ACCELERATORS—
El-Sixty; Ureka; Ureka C; Guantal; Santocure; RN-2 Crystals; DPG; Pip Pip; A-32; A-100; R-2 Crystals; A-10 • ANTIOXIDANTS — Flectols B, H, White; Santoflex B; Santovar A.
MONSANTO CHEMICAL CO.
Rubber Service Division
1012 Second National Bldg., Akron, Ohio

AERO BRAND
RUBBER CHEMICALS
DPG—DOTG—Accelerator 49
Rubber Sulphur
American Cyanamid & Chemical Corporation
30 Rockefeller Plaza, New York, N. Y.

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 39 years.*
The Aluminum Flake Co.
Akron, Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

ASBESTINE—Specially prepared for use in Rubber. Send for liberal working samples.
SOLE PRODUCERS
International Pulp Co.
41 Park Row New York City

CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
PITTSBURGH PLATE GLASS CO.,
COLUMBIA CHEMICAL DIV.
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CAMELINE WHITE CALCITE FILLER
99.75% 325 mesh, more than 90% minus 25 microns; soft, thin, platy particles, assuring better tensile, flexing and elongation.
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YORK, PA.

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the world's standard gas black, universally known as the "King of Rubber Pigments."
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41 East 42nd St. New York City

CARBON BLACK
CONTINENTAL
The Newest Name in Carbon Black offers
CONTINENTAL DUSTLESS
CONTINENTAL COMPRESSED
CONTINENTAL UNCOMPRESSED
Continental Carbon Company
295 Madison Ave., New York, N.Y.

CARBON BLACK— *Aerfloted*
Arrow Black for rubber compounding. Standard for grit-free uniformity.
J. M. Huber, Inc.
460 West 34th St. New York

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world
UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CARBON BLACK
WITCO DISPERSO
and DUSTLESS and a
Complete Line of High Quality
Rubber Chemicals
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295 Madison Ave., New York, N.Y.

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street New York City

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Carbon Black—Clay—Colors
Accelerators—Sulphur
Stocks Carried At All Times
Ernest Jacoby & Co.
79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

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For Rubber: *Accelerators, Antioxidants, Specialties*
For Industry Generally: *Acids, Oil of Myrbane, Aniline Oil, Latex, Lotol, Dispersions*
NAUGATUCK CHEMICAL
Division of United States Rubber Co.
1230 SIXTH AVE. NEW YORK

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Ingredients—Whiting, Clay, Talc, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
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Resinous Oils Dispersing Oils
Reclaiming Oils Softeners
Solvents
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COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
HEVEATEX CORPORATION
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Harmon Organic Rubber Color Granules are bright in shade and fast in cure. *Easy to weigh—Easy to disperse —Economical—Will not dust or fly.*
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Paterson, N. J.

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BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
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Rubber Service Division
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Vulcanizing Agents
Accelerators
Antioxidants
Plasticizers
Dispersions
Pigments
Clays
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Aromatics
Blacks
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230 Park Ave. New York City

The Market Place

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Chemicals and Compounding Materials (continued)

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An Approved Clay for Rubber Compounding
Southeastern Clay Co.
Aiken South Carolina

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U.S.P. Technical and Special Grades
Marine Magnesium Products Corporation
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STEARIC ACID
STEAREX . . . CAKE or POWDER
STEAREX BEAD
Standardized Products for Rubber Compounding
MINERAL RUBBER (Parmr), TALC
SOAPSTONE
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CUMAR —Paracoumarone Resin.
A neutral gum for rubber compounding.
Samples and prices on request.
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Pure Oxides of Iron
Yellows—Reds—Browns—Black
MAGNETIC PIGMENT CO.
Manufacturers
BINNEY & SMITH CO.
Distributors
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Rubbermakers' TIRE BRAND and TUBE BRAND. Also CRYSTEX Insoluble Sulphur, Sulphur Chloride, Caustic Soda, Carbon Bi-Sulphide, Carbon Tetra-Chloride.
Stauffer Chemical Company
2710 Graybar Bldg., New York City

DU PONT Rubber Chemicals
DU PONT RUBBER COLORS
DU PONT ACCELERATORS
DU PONT ANTI-OXIDANTS
E. I. du Pont de Nemours & Co., Inc.
RUBBER CHEMICALS DIVISION
WILMINGTON, DELAWARE

PARA-DORS—
overcome odors in rubber—effectively and at low cost.
GIVAUDAN-DELAWANNA, INC.
Industrial Aromatics Division
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TITANOX-A (Titanium Dioxide)
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TITANOX-L (Lead Titanate)
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The Universal Softener—Adaptable, Uniform. Improves Quality—Economical.
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lead free—pure—uniform—dependable
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AZO ZZZ-22 AZO ZZZ-44 AZO ZZZ-66
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Chicago *St. Louis*

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—A cool mixing reinforcing black for Footwear and Mechanicals. Good ageing —Improved oil resistance.
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The Cryptones The Albaliths (Lithopones)
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Cleveland, Boston, San Francisco

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Special Process Reinforcing BLACK. Superior aging and oil resistant properties. Low permanent set.
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GENERAL PROPERTIES CO., INC.
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Asbestine—Barytes—Talc—Soapstone
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ZINC LAURATE
Colite Mold Lubricant for Extra High Gloss
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New and better.
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Specialists in Rubber Cutting Equipment for Bands, Crude Stock, Jar Rings, Tubes, Rollers, Washers, Treads, Cement Stock, etc.
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For measuring the thickness of rubber and similar materials. Many models.
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SPAN grinding mill reduces soft and hard rubber to fine powder.
Made in U. S. A.
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"MASTER" Tube Molds, Tire Vulcanizers, Molds and Cores, Tire Drums, Tubers, etc.
Special Machinery Built to Order
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Licensed Under Clyde E. Lowe Co. Patents
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ROSS Improved Mixers for cutting rubber cements. Standard Mixers, 50-500 gallons; Change Can Mixers, 5-50 gallons.
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For Quality and Efficiency in Working Rubber. Consult us about your problems.
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STOCK SHELLS
A Type for Every Need—Large Diameter—Light Weight — Extra Strong — Seamless.
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Pequanoc Rubber Co.
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WANTED TO BUY

JOBBER IS INTERESTED in purchasing job lots of rubber sheets of type used in shoe trade. Also rubber heels, taps and soles. Will buy large and small quantities. Spot cash for all transactions. Replies treated confidentially. Submit offers to BUYER, Box 1176, RUBBER AGE.

LARGE DISTRIBUTOR wants to buy 5,000 to 10,000 Smooth Rubber Sheets suitable for die-cutting top lifts, 7 to 9½ iron; Also interested in large quantities of rubber heels of first grade quality only. Correspondence invited from all rubber manufacturers. Address Box 1175, RUBBER AGE.

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WANTED FOR USER: 1—#3 or #9 Banbury Mixer; 3—Mills; 1—Calender; 5—Hydraulic Presses, with pumps and accumulators; 2—Tubers. Address Box 1014, RUBBER AGE.

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500 house organs $15.00; 1,000 $20.00. Good will and sales builder. Your ad front cover. Get samples. CRIER (11) 1840 East 87th St., Cleveland, Ohio.

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INDEX TO ADVERTISERS

Advance Solvents & Chemical Corp. —
Akron Equipment Co. 73
Akron Standard Mold Co. 73
Albert & Son, L. 73
Aluminum Co. of America —
Aluminum Flake Co. 71
Aluminum Ore Co. —
American Cyanamid & Chemical Corp. 71
American Firstoline Corp. —
American Zinc Sales Co. 72
Ames, B. C., Co. 73
Arkwright Finishing Co. —
Atlas Electric Devices Co. 5

Badenhop Corp., Robert 62, 74
Baird Rubber & Trading Co., Inc. 55
J. T. Baker Chemical Co. 53
Barr Rubber Products Co. 75, 76
Barrett Co., The 72
Beacon Co. 59, 72
Binney & Smith Co. Insert Following 44, 71, 72
Black Rock Mnfg. Co. 73
Brockton Cutting Die & Machine Co. 73, 76

Carter Bell Manufacturing Co., The 59, 72
Chemical Industries, 18th Exposition of —
Cleveland Liner & Mnfg. Co. 7, 75
Colonial Insulator Co. 73
Columbian Carbon Co. Insert Following 44, 71
Connor, Charles F., & Co., Inc. 74
Continental Carbon Co. Insert Following 2, 71
Continental Machinery Co. 73
Continental Rubber Co. 74

Dispersions Process, Inc. 74
Du Pont de Nemours & Co., E. I. Inside Front Cover, 72

Eastern Engineering Co. —

Farrel-Birmingham Co., Inc. —

Gammeter, W. F., Co. 62, 73
General Atlas Carbon Div. 8, 72
General Latex & Chemical Corp. 74
Givaudan-Delawanna, Inc. 72

Hall Co., The C. P. 57, 72
Hamlin Machine Co. 73
Harmon Color Works, Inc. 56, 71
Heveatex Corporation 71, 74
Hoehler, Harry G. 71
Holliday, W. J., & Co. —
Huber, J. M., Inc. 71
Hycar Chemical Co. 32, 55, 57, 59, 61

International Pulp Co. 62, 71
Interstate Welding Service 4

Jacoby, Ernest, & Co. 71, 74

McKinnon Iron Works Co., The 73
Magnetic Pigment Co. 72
Marine Magnesium Products Corp. 72
Monsanto Chem. Co. (R. S. Dept.) 71
Moore & Munger 6, 71
Muehlstein & Co., H., Inc. 10, 74

National Carbon Company, Inc. 17
National Rosin Oil & Size Co. 60
National Sherardizing and Machine Co. 73, 76
Naugatuck Chem. Div. U. S. Rubber Co. 20, 71, 74
Neville Co. 71
New Jersey Zinc Co. 18, 72
Noble, R. J. 75
Norton, M., & Co. 73

Olin Laboratories, The R. R. 75

Pancorbo, M. 73
Pequanoc Rubber Co. 74
Pittsburgh Plate Glass Co., Columbia Chemical Div. 71
Plastics News Letter 58
Porotex Products 75

Rand Rubber Co. 75
Randall, Frank E. 73
Rare Metal Products Co. 59, 71
Revertex Corp. of America 74
Rhoades, R. W., Metaline Co., Inc. 75
Ross & Son, Charles 73
Royle & Sons, John 73

St. Joseph Lead Co. 72
Schofield-Donald Co. —
Schulman, A., Inc. Inside Back Cover, 74
Scott Co., Henry L. 59, 74
Skelly Oil Co. 14
Southeastern Clay Co. 62, 72
Stamford Rubber Supply Co. 62, 72
Standard Chemical Co. 13
Stauffer Chemical Co. 10, 72
Stearns Magnetic Mfg. Co. 73
Sun Oil Co. 72

Textile Proofers, Inc. 54, 75
Thiokol Corporation 9
Titanium Pigment Corp. 15, 72
Trade News Service —

Union Carbide and Carbon Corporation —
United Carbon Co. Insert Following 62, 71
United Shoe Machinery Corp. 73
U. S. Rubber Co., Naugatuck Chemical Div. 20, 71, 74
U. S. Rubber Reclaiming Co. 74
Utility Color Co. —
Utility Mfg. Co. 73

Vanderbilt, R. T., Co. Front Cover, 71

Weber, Hermann, Co. 74
Whittaker, Clark & Daniels, Inc. 56, 71
Williams, C. K., & Co. 62, 72
Wilson Co., C. T. 74
Wishnick-Tumpeer, Inc. Outside Back Cover, 71

Zophar Mills, Inc. 60

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